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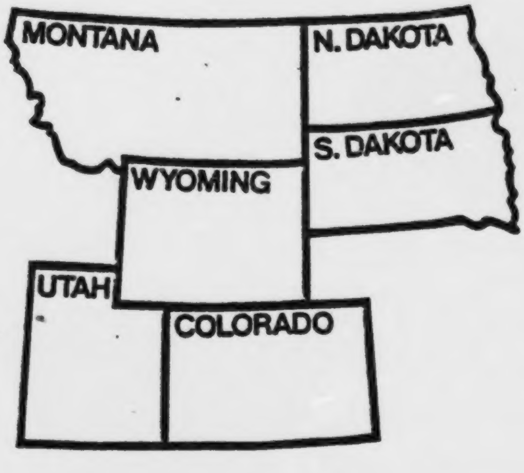
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Planning Methodologies
For Predicting
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REPORT OF THE CONFERENCE

PACT Health Planning Center and
Region VIII Health Manpower Program, PHS, DHEW

June, 1978

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DEPARTMENT OF HEALTH, EDUCATION, AND WELFARE
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PUBLIC HEALTH SERVICE

TO CONFERENCE PARTICIPANTS:

It was a pleasure for the Regional Office to sponsor this conference on Planning Methodologies for Nursing Manpower. We are indebted to Alice Turak, Associated Director for Training, PACT Health Planning Center, Denver, Colorado, for a stimulating experience. She brought together an excellent panel of presentors as well as a very responsive audience.

This conference has significant relevance to the present as we strive to improve the delivery of health care to the American public. It was a first attempt at bringing health planners and professional nurses together to plan for meeting nurse manpower needs in the future. We hope that future conferences can be offered to preserve and enhance the cooperative efforts evidenced at this meeting. You are all to be commended for the contribution each of you made to the success of this conference.

This excellent report has been prepared by Mary Segall, R.N., Ph.D., Associate Professor, School of Nursing; Marilyn Stember, R.N., Ph.D., Associate Professor, School of Nursing; and Carl Slater, M.D., Assistant Professor, School of Medicine, all at the University of Colorado Medical Center.

Bernice Szukalla

Bernice Szukalla
Regional Nursing Consultant
Health Manpower Programs

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INTRODUCTION

Alice Turak
Associate Director for Training
PACT Health Planning Center

The PACT Health Planning Center is one of ten regional centers for health planning mandated by Congress in the National Health Planning and Resources Development Act of 1974 (P.L. 93-641). We provide health planning technical assistance through on-site consultations, training programs, and written materials. You may know of us from your associations with the Health Systems Agencies or the State Health Planning and Development Agencies in your area. Some of you are on HSAs, either directly on the board or working on task forces. Our goal is to improve the quality of health planning efforts in Region VIII. The conference and the resulting monograph are one part of PACT's strategy for promoting linkages and information exchange as well as providing timely information.

This conference was put on as a cooperative venture between the PACT Health Planning Center and with the Health Manpower Branch of DHEW, Region VIII. We worked together to assemble the program and we really hoped that those in attendance came away having learned more about nurse manpower planning, health manpower planning and a variety of methodologies that can prove useful to you. This report is more than a summary of the conference proceedings: it includes introductory chapters which highlight key points, summaries of the presentations, two annotated bibliographies and a list of those people who attended the conference. It is intended as both a reference document and as a point of departure for planning and data gathering efforts. Some of the meetings suggested at the state caucuses which are reported here have already begun. PACT is interested in hearing of any other outcomes of the conference.

At the conference participants were able to talk and work together. We urge readers of this monograph to contact conference participants both faculty and attendees for further updates and clarification.

WELCOME

Ms. Bernice Szukalla
Nursing Consultant
Region VIII, Health Manpower Programs

Welcome to Denver and to this meeting on planning methodologies for predicting nursing manpower requirements. The purpose of this conference is to bring together all those who have an interest and a responsibility in planning for nursing manpower needs. The regional office has supported such meetings for Dentists, Physicians, and now Nurses, the three major segments of any health care delivery system.

Nursing has been doing manpower studies and projections since the 1940's on a state level. In most instances, recommendations were not implemented because the planning was done only by nurses for nursing. With the advent of the Health Planning and Resource Development Act, one of the areas of responsibility of the Health Systems Agencies (HSA) is to develop a manpower plan based on health care needs.

It is important at this point for the professionals who are responsible for training and quality of care to join forces with the health planners to insure that all aspects of the law will be achieved. The legislation identifies the need for planning in relation to access, quality, and cost containment. Much is heard about cost containment but as Dr. Julius Richmond stated at an HRA meeting in March,

> "While we've started with issues of cost containment, we mustn't lose sight of overall health goals, and that at the local level, HSAs should be looking at overall health and not just health costs. We should encourage HSAs to look at what's happening to people and not just to institutions."

This meeting was planned to present various approaches to manpower planning. It is hoped that before this conference closes, each state will have developed some mechanism for joint planning to meet manpower needs.

SECTION I

INTRODUCTION AND IDENTIFICATION OF THE ISSUES

Planning is a staged process designed to influence the quantity and distribution of resources and health services in an area. Basically, the process progresses from establishing requirements, criteria, and standards to implementation and evaluation. The process of establishing requirements begins by identifying needs and demands which are then translated into services. From the service needs, planners can then derive resource requirements in terms of facilities, equipment, health manpower and money. Health manpower planning is a key part of the overall planning process and is specified in the planning law, PL 93-641. This conference was designed specifically to assist in the implementation of this aspect of planning.

Specifically, the objectives of the conference and of the resulting monograph were:

1. To describe the need for nurse manpower planning by health planners, nurse organizations, nursing schools and state and federal organizations.
2. To develop linkages among the various planners, organizations and officials.
3. To describe various methodologies for nurse manpower planning.
4. To define data requirements, advantages and shortcomings of each methodology.
5. To identify sources of data for nurse manpower planning.
6. Through statewide workshops to explore the feasibility of each state adopting an explicit methodology.

Among the issues highlighted at the conference were: who should be involved in nurse manpower planning; how should nurse manpower models be selected and used; of what use are the various models for forecasting and projecting nursing manpower requirements; and how can such planning be effectively implemented.

The question of the selection of an appropriate model was the major thrust of the conference. No matter which methodology is selected assumptions will be made. It is important that the assumptions which are made be articulated and acceptable to those concerned. Assumptions should be based on the requirement for delivering effective, nursing care of patients as well as meeting the needs of the professional nurse (good working environment, acceptable employment conditions). Each plan should specify which approach is used and what the assumptions of such an approach are.

Glasser, in his presentation, articulates several questions related to purposes, procedures and people. The model choice for him begins with purpose questions, (i.e., whether one is interested in status quo projections or futuristic projections). In particular, Glasser distinguishes two future oriented approached as projective, based on statewide assumptions, and as forecasting based on futuristic assumptions. Of further concern in the selection of an appropriate model are questions of its focus and how useful this focus is for the intended purpose. Is the model focused on the demand for (that is the willingness and ability of people and third party payers to pay for), the supply of, or the requirements for nursing personnel. Relevant to focus on is also the question of whether economic theory operates in nursing. In fact, are nursing unemployment rates valid indicators of excesses or shortages in nursing personnel? Is the national, state or some other level the appropriate level for the application of a model? Can, in fact, a national model be adapted to the state level?

These questions lead into the important and overriding question of what should be the unit of analysis? Should the unit of analysis be the federal, the regional, the state, the HSA, the county or the institutional level? Should a model be selected which has as its unit of analysis primary service areas generally, or should we undertake specific studies or shortage areas to determine their unique dynamics? Probably there is no one right answer. One or more of the models may meet the needs of a particular group or an area involved in nursing manpower planning. The above questions in the light of the intended purposes, however, should be considered in making the selection.

A further series of questions pertain to what Glasser calls procedures: how the models are to be used and applied; what data; what should be done in the face of vague or incomplete data; and what kind of electronic data processing capability is necessary. Finally come the people questions and what specialized knowledge (for example, the manpower dynamics of a field dominated by women, the necessary educational preparation for entry level practice, the substitutability of various kinds of nursing personnel for one another, etc.) in nursing is needed for successful use of a model? Furthermore, how can this knowledge be acquired if not solely by the involvement of practicing nurses, nursing educators, and nursing researchers? What technical staff are needed?

The selection and use of models for nursing manpower planning involves a range of questions which demand careful consideration. Fortunately, Glasser and Dars as well as several of the conference participants, have significant knowledge and insight to offer from their experience in the selection and use of models for nursing manpower planning.

How Can Nursing Manpower Planning Be Effectively Implemented?

A plan itself is a collection of data, some stated goals and priorities, recommended policies, and suggested options. Planning is a dynamic process which uses such documents for the achievement of goals and policies. Planning seeks to implement, to influence and control the supply, types, utilization, and geographic distribution of nursing personnel. To be successful, nursing manpower planning should be most concerned with the question of who is involved in the planning. Successful implementation of the entire planning process relates both to how to involve providers and how to link their professional organizations to all levels to the planning process? Finally, during the implementation phase, how will all of these individuals and groups be linked through communication and involvement to achieve implemented nursing manpower planning?

The questions elaborated in this section were repeated frequently in the presentations and discussions at this conference. Some of them were answered, and most of them were mentioned at least once. Their listing here is intended to focus the reader's attention through the following presentations. A summary and conclusions section at the end of this report represents the authors' attempt to pull together the collective thinking of the conference speakers and participants on these issues and questions.

SECTION II

THE PLANNING PROCESS

Craig does a superb job in the keynote address of setting the scene and discussing nursing involvement and nurse manpower planning. She begins by identifying the issues with P.L. 93-641. She identifies a number of problems associated with nursing involvement and specifically cites that the overriding problem is how nursing can establish its rightful leadership. Her concern is with how nursing can take a proactive stance in the face of nursing's historical reactive posture, disunity problems and lack of data for nurse manpower planning. As offsets to these problems, she cites the potential "gives and gets" that nursing can derive from being involved in planning. Among the gives, she cites nurses' unique knowledge and perspectives; an example is nurses' health orientation--prevention focus. Among the gets, she cites the useful data and insights both present and future, as well as the contacts, interdisciplinary and consumers, that may result from involvement in the planning forum. She illustrates these issues, problems and potentials with contrasting examples of her experiences in New Hampshire and western Massachusetts in nursing manpower planning.

This scene-setting provides an excellent introduction to Schneider's talk, for she describes the mechanics of how nurses have been successfully involved in the South Dakota Linkage Project. Specifically, she outlines the historical developments of the Nursing Component of the Health Manpower Plan and the unique processes used to develop the plan in South Dakota. The key to this process was the establishment of the Linkage Committee Structure. She focuses particularly on the Nursing Subcommittee and its procedures, beginning with its initial development of a guiding philosophy addressing health care and nursing roles. Thus, both Schneider and Craig speak to the process of nurse manpower planning; specifically, they address how nurses may be involved in the process effectively and how they may be linked with others who are participating in and guiding the planning efforts.

NURSEPOWER PLANNING--INTEGRATION
UNDER/OVER/WITH P.L. 93-641

or

"The Health Planning Process--What's In It For Us?--
How Can We Survive Without Being In It?"

Margaret M. Craig, R.N., M.S.
District Health Officer,
Western Regional Office,
Massachusetts Department of Public Health

Webster has defined a keynote address as "an address designed to present the issues of primary interest to an assembly and often to arouse unity and enthusiasm." I have had experience in Massachusetts with Health Planning and in New Hampshire with Nursepower Planning that has helped qualify me to try to arouse unity and enthusiasm among this assembly pertaining to issues of primary interest. While many of you here have probably been as involved as I, the advantage for the keynote speaker, I find, is the opportunity to select the issues of primary interest.

Briefly, I have been chairperson for three years of a sub-area council and member of the executive committee of the Western Massachusetts Health Planning Council. For the last year I have represented our Health Systems Agency (HSA) on the State Health Coordinating Council (SHCC) and serve as chair of the Prevention Subcommittee, and member of the Executive Committee. I therefore have extensive voluntary involvement in P.L. 93-641 process at three levels.

Between 1974-1978, I was employed as one of two staff persons to lead and direct the Statewide Interdisciplinary Planning Project for Nursing and Nursing Education (SIPPNNE), a Regional Medical Program (RMP) funded, nurse power planning project sponsored by the New Hampshire Nurses Association. The project was developed, and continues now under a Division of Nursing grant, to plan activities, mechanisms and strategies that would lead to the successful achievement of the following desired outcomes of the project:

1) to identify, systematically, specific changes and transitions required in nursing education in order to contemporize the basic and continuing education of nurses in New Hampshire;

2) to develop guidelines and suggested target dates for introducing innovative methods and new approaches to the utilization of nurses for the delivery of quality nursing services in the variety of health care agencies and institutions which provide health care services to the people of New Hampshire; and

3) to suggest various approaches to the continuous assessment of the total system of nursing-- both its education processes and practice-- to assure that the nursing profession's contribution to improving the quality of health services in New Hampshire be constant.

The emphasis has always been on the implementation of planning. The fact that we undertook the SIPPNNE project just as P.L. 93-641 was being implemented, was not lost on us or in the State of New Hampshire's planning staff and excellent collaboration has resulted. My own involvement in Western Massachusett's HSA made it easier for this collaboration to result. Unfortunately, although Massachusetts borders New Hampshire making my kind of commuting very possible, no such organized nurse planning involvement in HSA development exists there. (More on that later.)

Issues associated with planning for nursepower

UNDER/OVER/WITH organized HSA's and SHCC's

UNDER: "Let the Planners do it" or Planning by Nurses? Planners? or Nurse Planners?

The opportunity to observe closely nurse involvement in two states, and to have talked to many other involved nurses at conferences like this, and at ANA convention two years ago confirms my assumption that whether nursepower planning is happening under/over or with P.L. 93-641 structures has more to do with individual initiatives of nurses and nurse planners than to the logic inherent in working together.

In contrast to my New Hampshire experience, let me relate briefly the Massachusetts' experience. The "Health Manpower Linkage Project" was going on at the same time I worked in New Hampshire. This project, supported by the Bureau of Health Manpower, was completed by planning staff of the Office of State Health Planning. The project director noted in the final report that "perhaps the most effective linkage fostered by the project has been at the State-Federal level". I see that as quite a statement as it clearly acknowledges that linkage mechanisms that might have been expected among the state agencies and other sectors (i.e., education, health services, professional organizations) showed little or no coordination. And, sadly, two years later there seems to be no improvement. This project occurred as P.L. 93-641 was becoming operational in order to collect needed data, but it is clear that its impact on implementing needed change has been negligible to date. This experience exemplifies to me the danger of "Letting the Planners do it" alone. The tragedy of all this is that there is no project, such as SIPPNNE, committed to bringing nurses and planners together around these problems in Massachusetts. The planners identify the problems and provide useful data, but nursing has not responded to the facts they compiled, validating an old assumption that non-involvement is grounds for non-acceptance.

Kalisch and Kalisch in Nursing Involvement in the Health Planning Process (30)* define Planning as "Planning is policy choice and programming in the light of facts, projections, and application of values. Health planning is an activity that concerns itself with proposals for the future, with the evaluations of alternative proposals and with the methods by which these proposals may be achieved. It is rational, adaptive thought applied to the future." I would add the concept of involvement in this process and note that its absence in planning negates all the persuasiveness of facts alone.

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*These reference numbers refer to the numbers of items listed in the Selected Bibliography on Planning for Nurses on page 78 of this report.

> OVER: Competition for "planning role" between SNAs. Universities, Boards of Registration, Higher Education Boards, State Leagues and others.

Probably no state in the Union is more fertile ground for the competition that paralyzes thoughtful planning than Massachusetts. I wouldn't suggest that any of the competing factions are so strong as to paralyze progress alone, but the dust they unsettle among themselves is barrier enough to the Health Planners. The result of this is that individual R.N.s and M.D.s, rather than their organizations, are impacting on health planning, and the result, I fear, will not lead to "rational, adaptive thought applied to the future." There are many more individual M.D.s impacting on HSAs than there are individual nurses, which is great cause for concern. A year ago The American Nurse, June, 1977, (1) noted that "although nurses in the nation outnumber physicians 3 to 1, the latter constitute 27 percent of the health care providers on boards of HSAs. Whereas R.N.s accounted for only 7 percent of providers". We must do something about that.

The Kalischs include two significant quotes in their monograph attributed to an M.D. who was Executive Secretary of the Wisconsin Medical Society in 1976 and attended a conference on P.L. 93-641 directed to organized medicine. In an interview he was quoted to say,

> "The HSAs will be the heart of the planning law and we need to find our answers through local politics. If we don't, God help us. . . . The HSA is a political animal and you need to lobby it just like you do your State legislatures. Medicine needs to be there when HSA board members are nominated, when they're elected, when they debate an issue. Medicine needs strategies and must keep the pressure on HSAs to hold them accountable . . ." (30)

I wonder--what did he mean? Accountable to what? I've not heard nurses speak so forcefully concerning nursing input.

> WITH: "Finding the time to plan for nursepower between Health System Plan (HSP), Annual Implementation Plan (AIP) and work program, etc. requirements" or "How can one mere nurse impact on this high pressure Bureaucracy?"

If your experience during the startup phase of P.L. 93-641 has been typical, the reality of bringing nursing issues directly into HSA debate has been difficult. Unless you live in an area with severe shortages of nurses, it's hard to see many nurse planning issues getting addressed in the first phase of plan development. My experience has been that few nurse specific issues have arisen, but millions of nurse-related spinoffs surface every month. Sometimes it takes a special effort to ask the question--how does this goal or problem affect nursing? But that is exactly what we must do. A few loaded examples of relevant issues to nursing addressed in some HSPs I've reviewed are:

--The occupational structure of health care should be altered to eliminate overspecialization and maldistribution of health manpower and to improve occupational mobility.

--The makeup of all health occupations should reflect the makeup of the populations which they will be expected to serve.

--Programs training qualified nurse midwives should be functioning in Boston area by September, 1978. (For a State where it was illegal to practice nurse midwifery a year ago, that is a tall order!)

--Attention must be given to retaining needs of doctors and nurses in institutions being closed or consolidated (HSPs in Massachusetts urge the elimination of 20 percent of the hospital beds statewide)

Problems Associated with Nurse Involvement (and/or non-involvement) in P.L. 93-641.

A keynote speaker trying to arouse unity and enthusiasm would be unwise to dwell on problems, but I wouldn't want you to think I was naive to them or that they don't warrant our attention here. My list of problems is as follows:

Reacting rather than acting. It is my observation that this cliche is a theme that mirrors the historical development of nursing, and thus nursing involvement in health planning. Our journals have given only limited attention to health planning. *AJN* severely edited the article (10) Terry Chopoorian and I submitted for publication, because they argued the issues were too complex for *AJN* readers. I am also aware of few reactions from nurses to goals and objectives in HSP and AIP hearings. Too often these were protectionistic in nature (i.e., reaction to bed-reduction, associated with job loss), not positions taking leadership in calling for system-wide changes that would address health care delivery needs of the 80's and 90's.

Leadership. While the ANA '76 convention voted approval for the resolution on health planning, sponsored by the Conference of Chairpersons, I have seen no budgetary commitment to the proposed "mechanism for assisting nurses officially involved in health care planning." Thus, in many states, we who are involved must approach our duties without direction, "reacting rather than acting" as a nurse representative. Also, we note that many HSAs and the National Advisory Council do not have any nurses as voting members, yet organized nursing hasn't pressed for inclusion through recourse to legislative action and judicial review, as voted in the '76 resolution.

Disunity Problems. When I spoke of organizational competition, I addressed the disunity problems inherent in even being able to gain consensus for statements at HSA/AIP public hearings. Your own Ada Jacox addresses this issue so well in her recent *Nursing Outlook* article, "Address to the Next Generation". (28) One brief quote, if you haven't yet read this article:

> "In 1978, for instance, we were in a strong position as a profession to take major stands on a number of issues (i.e., credentialing, collective bargaining, '85 resolution, nursing education, oversupply) relevant to health care and to nursing. Had we been able to become sufficiently unified to determine where we wished to go collectively, our impact on how you are functioning twenty-five years later would have been considerably greater, as would our impact on health care."

Lack of Agreement on Priorities. The above quote speaks to this problem as well. While I wouldn't suggest that every nurse involved in health planning should or could agree to and address the priorities of the profession, the potential power of having spokespersons for nursing in every HSA and SHCC is too important a possibility not to work towards.

Lack of Nurse Specific Data in Many Areas. Recent fiscal problems in Massachusetts and a basic negative political attitude about our professionally dominated Boards of Registration have resulted in no new nurse specific data since 1974. Registration applications completed on computer cards are stored in shoe boxes and not key punched or even counted. This describes the data situation at its worst. You may have experienced something like it in your states. But if health planning, and therefore manpower planning, is supposed to result from a combination of "facts, projections and application of values", we would all agree that we can't even start without facts. Hopefully we will all return home from this conference more skilled in procuring essential facts about nursepower.

The other glaring lack associated with facts and nursing is the limited research data, documenting nursing's impact on health status. While I see this problem as the most glaring, we also fail to document the differences in capabilities among nurses prepared at six levels. Despite the disproportionate amount of nursing research addressing nursing education problems, I have no definite basis except gut feeling to press for access to baccalaureate education when I "impact on my HSA and SHCC".

Potentials Associated with Nurse Involvement in P.L. 93-641

No one, provider or consumer, can be expected to give as much as involvement requires unless he or she gets rewards as well. While the balance of giving and getting can balance rather easily for nurses, the lack of this balance is why committed consumer involvement is such a universal problem among HSAs and SHCCs. Let's look first at what nurses and nursing is giving to the planning process.

Provider knowledge of health issues linked with consumer advocacy values. Many health planners tell me that they relate best to the nurse members of HSA committees and boards because they are so savvy to the health care issues dealt with in the process--while on the other hand, they can usually see these issues with consumer viewpoints. That assumption sounds like it needs more research--but do you agree that it has some merit? I provoked quite a debate with that observation at the '76 ANA convention where several nurses involved in New York City's HSAs argued that the issues facing nursing in their area were so critical that they could use no time to deal with consumer health issues. My belief or value is that only as we address consumer health issues will we find the needed direction for nursing as it enters the 80's.

An overriding theme for the direction of P.L. 93-641 is its three vital components:

1. The assessment of the health problems of people (health status)
2. The translation of these problems into services and facilities
3. The training of health person power to provide these services and to staff these facilities

The logic of these steps is so similar to the nursing process that we all value and hold as our standard, that I contend that most nurses feel very comfortable with the health planning process--(if not with the slowness of the process). Futhermore, our AJN article stressed our belief that the ten priorities of the law also lend themselves well to the value systems of many nurses. Listen as nurse planners, nurse education planners and nurse researchers, to this summary of the priorities, which state there shall be:

1. Provision of primary care services for medically underserved populations, especially those which are located in rural or economically depressed areas
2. The development of medical/health group practices
3. The training and increased utilization of physicians assistants, especially nurse clinicians
4. The promotion of activities to achieve needed improvements in the quality of health services
5. The promotion of activities for the prevention of disease, including studies of nutritional and environmental factors affecting health and the provision of preventive health care services.
6. The development of effective methods of educating the general public concerning proper personal (including preventive) health care and methods for effective use of available health services

Voices Concerned with Quality/Accountability. It is no coincidence that most utilization and quality review coordinators of PSRO, Medicaid, etc. are R.N.s. Nor is it surprising that the informal referral services of R.N.s have been utilized for years by the public. The R.N.s on the review committees of our HSAs can be counted on to ask the most probing questions of Certificate of Need (CON) applicants concerning Quality/Accountability issues. The ANA's

Quality Assurance model gives us all an excellent tool to develop criteria and measurements that the public and HSA members can understand. This will be particularly relevant for CON reviews and the "appropriateness" reviews we will soon be engaged in, as more HSAs become fully designated. Although I've never been satisfied with any HEW definition of "appropriateness", clearly these reviews open doors to Quality/Accountability reviews and we can look to nurses to push for this, along with consumers. In plan development activities, nurses and consumers are also pushing to see that the voids, gaps and duplications, which are controversial and too often overlooked, are raised. Are issues of grossly inadequate institutional care being addressed? So far, our HSA seems unready and ill-prepared to look inside the walls of our State psychiatric hospitals and chronic disease hospitals, etc.

Another major concern of mine is the results of the "deinstitutionalization" efforts of recent years. While there has been great enthusiasm for moving persons out of institutions, there has been woefully inadequate enthusiasm and planning for moving people back into communities. (The staff of a day care program in my county resigned in protest, last week, when they finally succumbed to the frustration of trying to serve eighty deinstitutionalized clients with a budget and facility planned for thirty.) Where are the planners dealing with these issues? Where are the nurses willing and able to work with the rest of Mental Health teams involved in programs for this population? Is not this an area of need that nurses can address? Where are the Schools of Nursing and faculties? Are they using these sites, and even more, non-traditional sites for clinical experience for students? When students and faculty are in these sites, demonstrating and testing roles for nurses, there are several important results. Nursing students expand their own visions of what nursing can be and interdisciplinary staffs gain an appreciation for the contributions nurses can make to the teams and most particularly to the clients--and not coincidentally, jobs open up for nurses.

HEALTH orientation--prevention focus. More and more voices are calling for health planners to advance wellness--HEALTH as a new priority for Americans. We all recognize that the health care system and the planning effort to date has had minimal impact on the real health status of the American people. Planning efforts have been forced to focus on cost containment issues with little regard for the "big picture" needs for reallocation of resources from high cost, high technology curative services, towards a wellness system intending to promote and maximize HEALTH. Ardell and Newman's article (3) stresses that:

> "P.L. 93-641, in combination with a growing movement towards 'holistic' health and well being, and dissatisfaction with the exorbitantly expensive illness sytem, provides an (excellent) opportunity for planners, operations research, and other interested professionals to advance wellness as (the) new priority for Americans."

We, the million working R.N.s are the most interested professionals and should be seen and heard as the leaders of this effort (inside health planning and without.) The only groups with more to gain in this effort are health educators and consumers.

John Knowles (31) points out

> "over 99% of us are born healthy and made sick as a result of personal misbehavior and environmental conditions. The solution to the problems of ill health in modern American society involves individual responsibility, in the first instance, and social responsibility through public legislative and private voluntary efforts in the second instance. Alas . . . (the doctor points out) the medical profession isn't interested, because the intellectual, emotional and financial rewards of the present system are too great and because there is no incentive and demand to change".

I contend that there are "intellectual, emotional and financial rewards" and incredible incentive and demand to change for nursing to meet this challenge.

We must also be cognizant of the fact that today's major public health problems or killers--hypertension, cancer, accidents--must be addressed in totally different ways than the killers of the 50's were. (We were able to vanquish disease then by washing the hands, giving immunizations and taking antibiotics). Today's killers must be addressed through life style changes, health education, the self-care movement and environmental changes. Looking at a wellness system which intends to prevent these killers, to maximize good health, and to move a person to higher levels of health, new services, strategies and settings must be found. Levin (34) stresses that we must recognize that

> "lay people, not health care providers, appear to be almost entirely responsible for their own strategies of health promotion and prevention and the control of symptomatic episodes, nondisabling illnesses and injuries, the vast proportion of disabling illnesses and injuries, and the continuing responsibility for chronic conditions."

However, I suspect your HSP ignores this obvious fact.

The question of how a National Health Insurance (NHI) system will alter that pattern must be addressed--but indeed we must shift from planning in terms of controlling disease rather than enhancing freedom of chioce and building skills to pursue maximal HEALTH. Where are we retraining "illness oriented" unemployed and soon to be unemployable nurses to these HEALTH concepts? Is there not a vital role for nurses in this arena--as we gear up for NHI? Practical and reality based examples to contribute to debate, HSP/AIP development and board education programs--our committees and planners had much more difficulty than we had anticipated coming up with action steps for our grand AIP goals and objectives. Again, I saw the nurses coming through with practical, credible alternatives for converting plans into action.

Group process skills/leadership. In Massachusetts there are three nurses on our eight-person SHCC executive committee. Two of our six HSAs have nurses as Presidents this year. Many more, like myself, chair SACs. Nursing is giving, and can give, leadership to the HSA structure due to its ability to bridge consumer-provider interests and, I believe, because many of us are skilled in group process.

Nursing is getting access to useful data. Despite the three-inch thickness of our HSP, there is still a vast amount of raw data on tapes that I am finding useful for community-based planning. Helping local agencies utilize Health Status data in their planning is one of the many services an HSA can offer. Nurses on committees can ask the necessary questions to assure that questionnaires and data collections are relevant to quality, prevention and manpower issues.

Sound assessments and understanding of health status resources and needs of HSA and State. Another great interest of mine is planning and evaluating continuing education (CE) for nurses. It is so appropriate for local CE planning groups to utilize the HSP assessments of resources and needs of their area in planning population specific and relevant programming. In addition, as nurses become more sophisticated in Quality Assurance, they can introduce the results of their nursing audits as critical need areas for CE planning. Nursing Education can look at HSPs for a valuable index of services and needs in their area to design clinical assignments and course content.

Nursing agencies, such as Home Health and Health Departments, obviously can make excellent use of these documents in evaluating their services and planning needed programs--rather than using their own time in collecting demographic data. The infant mortality rates are so shocking in some of our communities that I have been able to secure funding and introduce a program through the Massachusetts Department of Public Health to retrain and reimburse community health nurses in newborn assessments, premature and high risk followup. The price we are paying for the overemphasis on Medicare Conditions of Participation in community nursing agencies is glaringly apparent when we review our maternal-infant health status data.

Futuristic vision for trends. Requiring changes for nurses in manpower utilization and distribution/nursing education/continuing education. A recent AJN article on "Diagnosing Your Needs for Continuing Education" (38) notes that there are three areas nurses examine in their self-diagnostic process: the present level of their competence; their future professional goals; and their professional awareness, which includes issues and trends in the health care field in general and in nursing in particular. The two latter areas--future goals and professional awareness--are most lacking in the CE opportunities in our area. It's clear to me that our nursing leadership isn't a "futuristically" oriented group and this results in a log of our reaction vs. action modus operandi. As you may recall, the first goal in our SIPPNNE project was "to identify, systematically, specific changes and transitions required in nursing education and nurse utilization to contemporize practice in N.H." In order to do this, we pulled together as many facts and projections as possible, and then involved N.H. nurses in applying their values to the strategies for change necessary. We also, through invitational conferences, sought their direction in priority setting and establishing realistic time tables. We have established interdisciplinary task forces--on the top four issues--and proceed now in the hard work of change.

Health Planners and Nurse Planners struggle today with the very hard question of converting plans into implementation. We may learn that our plans are unrealistic or too narrow-but we must put as much effort into implementing and evaluating our plans as we have into assessing and planning. Nurses involved in health planning must find every opportunity to share the documents and the future oriented insights they have gained with their colleagues through articles, speeches, CE programs and informally.

Contacts and experience in an interdisciplinary arena. Another bias of mine is that nurses spend too much time talking to other nurses--"beating the dead issues of the past"--instead of addressing our problems and opportunities within the larger--health care, social, political, economic-arena. We are a subsystem in a vast system and we must deal in systems language with those larger systems if we are to survive. Many nurses who are just beginning to get involved in planning committees tell me they have never had the ear of so many other disciplines, and the forum sometimes inhibits them. But the law stresses that every voice and every vote is equal (how incredibly democratic in such a previously undemocratic health care system) and we must build out confidence in that forum. The confidence gained from taking on a hospital administrator at a sub-committee can have wonderful spin-offs back in the work setting. (It's probably best if we practice on hospital administrators from other hospitals.)

Contacts and experience with consumer groups. I suppose it's the same kind of "confidence" variable that I see as critical in relating to consumer groups. Also, I've been impressed by the rapport that is established between nurses and consumer members of our committees and boards.

Conceptualization of nursing problems/potential in a framework of the entire health care scene and larger social order. This area is absolutely critical to appropriate nursepower planning. The first two of thirteen assumptions that have guided the SIPPNNE project are that 1) nursing plans its destiny jointly with other health disciplines; and 2) that planning for nursing is accomplished within a framework of potential and future directions of health care as it develops nationally, regionally and locally. What better way to anticipate these future directions than through health planning involvement?

A critically important forum to interpret and gain support for nursing's role. This is essential in all aspects of the health care scene as reflected by ANA President A. Zimmerman's quote--"The time is overdue for Nursing to be recognized for its substantive and growing contribution to our nation's health care". I see three levels, and opportunities, for nurses involved in the planning structure to "interpret and gain support for nursing's role". First, sharing documents and articles through distribution and sharing of documents pertaining to nursing; arranging opportunities for nurse planning staffs and nursing leaders to address HSA boards and/or committees; and assembling articles and data to assist committees in understanding issues important to nursing. Second, formal opportunities to present at board meeting and for nursing members to raise questions such as "Why don't you include Nurse Practitioners in your staffing plans for the new Primary Care Clinic?", etc. We had a local issue where our only state university supported School of Nursing was threatened with a move to the center of the State (to be with the medical school). Three of us nurses on the Board asked for this matter to be an agenda item and were able to gain a resolution supporting the School staying in our area. This resolution was widely circulated and, I believe, was helpful in keeping the School in Western Massachusetts and educating board members and planners to the importance of baccalaureate and Masters nursing programs in its area. I want to stress, though, that I observe that the best opportunity to educate and be educated exists at the subcommittee level where many initial debates occur, and where in our case the real essence of plan development occurs. (This fact needs to be made clear to our nurse colleagues--that involvement at subcommittee or even as consultants or even as visitors to an open committee meeting can have impact. Non-members have far greater opportunity to voice their concerns at this level than at formal board meetings.) Third, informal communication, in my observation, is the opportunity for greatest impact into any organization. A law professor friend of mine theorizes that all decision makings and mind changings are made before, after and during breaks of formal meetings (the classic political reality).

Direct impact into designing future health care delivery system. This leads into NHI depending on your own level of frustration right now with health planning involvement. You may think this idea either extraordinarily naive, or a gross understatement. Nonetheless, as imperfect as this system may be, it is the best chance we're going to have at locally-based input into health planning. Locally-based input clearly facilitates opportunities for persons like you and I, who live far from State capitals and Washington, D.C., to give and get from the process. Since it is looking like the NHI debate will be a major part of 1978's Congressional election campaign--and with polls showing that the majority of Americans favor a NHI plan--the BIG question for all of us is what is the bottom line in the design of a NHI scheme and how can it be implemented in our health system area. An important question for the nurse planners here is what roles will nursing have in that grand design?

Suggested Strategies for Maximizing Nursings' Impact on the Health Planning Process

Organized nursing groups may have input into the process. Here again I have two contrasting experiences concerning organized nursing's impact into the HSA structure. In New Hampshire, with one HSA and one organized nursing group (the NHNA), the interface has been productive. NHNA has sought nominees for every subarea council, the HSA board and SHCC board, and most of those nominees have been elected. All involved nurses have also been part of a NHNA advisory committee to develop comprehensive nursing input into the process. This group has developed statements relating to such areas as nursing continuing education, coordinated health manpower data, rural health care, coordinating of school health education programs in K-12, salaries, health information systems, third party reimbursement to nurses, and much more (this list shows, to me, a healthy mix of self-interest and consumer advocacy). This committee has sought endorsement of its positions from the NHNA Board of Directors and then presented Position Statements for Organized Nursing in New Hampshire at every level of the public hearing process. These positions have been publicized through public media and internal State Nurses Association (SNA) newsletters, etc. The SNA newsletters also continually has called for more nurses to get involved in the electorate, committees, boards and to advise the Advisory Committee. SIPPNNE (the planning staff) has helped greatly in developing this mechanism for nursing involvement. In addition, their nurse planner staff has worked closely with the health planning staff on critical planning issues and take every opportunity to work within larger social, economic, educational, legislative and political arenas. SIPPNNE has also testified at all hearings and publicizes its positions.

I said I had two contrasting experiences. Massachusetts is the other. We have six HSAs, about twenty SACs, and one SHCC. While there are *many* nurses involved and many of us in leadership positions, our *organized* impact is almost nil. The Massachusetts Nurses Association (MNA) has tried to get lists of all R.N.s participating on HSAs and did encourage districts to nominate candidates. (Some did, some didn't.) Two meetings have been held for R.N.s participating with HSAs, but the R.N.s working on subcommittees (my idea of the place of major impact) weren't there. A few of us have given speeches around the state and written articles for newsletters, etc., but these are still aimed at the very basics of the Health Planning Law and sometimes some issues being addressed in HSPs.

The absence of "advisory committees" and board endorsement at every district level *weakens* our impact at public hearings greatly. Our districts are not directly contiguous with HSAs and an attempt to redraw those boundaries at the last annual meeting went down to defeat over protests from some traditionists.

Many of us here might argue about whether the SNAs *are* the most critical organized group from which to draw representatives of nursing into health planning. The way I interpret the law, the nurse elected to the board should be representing some body and certainly not, in my mind, her employer, but her profession. I guess my bias is clear, though I fully recognize the SNAs have not all been able to get it together, like N.H. I feel nursing is such a wide field to represent that a nurse representative HSA members need a great deal of input in order to truly speak for nursing and not just their own subspecialty, etc.

Individual Nurses may also have input into the process. I would like to see individual nurses involved in health planning, whether they represent SNAs or other organized nursing groups or even an employer, have opportunities to get *facts and projections* to use as bases for their decisions. The most appropriate vehicle for this flow of information seems to me to be from ANA and needs to be directed to members and non-members alike, if nursing as a whole is to benefit from nursing's input into P.L. 93-641.

Areas for continued involvement and for "shadowing". Most HSAs' bylaws allow for rotating board membership and most of us fully endorse the notion of avoiding entrenched boards. It therefore behooves all of us who presently occupy "seats" on boards to be looking towards preparing others to take them over. Some elction procedures that have nurses competing with nurses for the seats don't help in keeping all involved nurses feeling unified. Some of us will be rotating off soon and need to address ways to share our "gettings" with others and to keep knowledgeable about the issues. Though board seats may change, opportunities to participate on task forces, committees or even establishing new ones addressing gaps are plentiful. There is so much work to be done. My observation is that the Health Planning structure will always depend on willing volunteers at every level. Perhaps some of us "rotating off" will have more time to develop some of the needed linkages with organized nursing. I talked about that before. All "out of office politicians" are familiar with shadow governments. Who better to critique and praise future directions of the organization than the founders. Students need to be encouraged to shadow the local HSA too, have contact with "role models" who are involved, and to involve themselves in the issues.

Opportunities for output and feedback. The small percentage of nurses who do have direct involvement, or who recently did, in the planning process and who in turn are "getting" all the tremendously important insights discussed earlier must find ways to share this "getting" through much more "giving" to their peers. If nurses in the year 2000 are able to fully contribute to the Health Care needs of our citizens, it won't be because some of us were "giving and getting" to the health planning process of the 70's, 80's and 90's, it will be because most of us could envision the needs for nursing in the future, and sufficiently adapt (as we have done so well in our history) to the health/nursing needs of the future.

THE ART OF UNDERSTANDING LINKAGES--

THE SOUTH DAKOTA LINKAGE PROJECT

Sister Mary Schneider
Coordinator of Linkage Subcommittees
South Dakota Manpower Linkage Project

Linkage is an approach to health manpower planning--a process whereby goals, objectives, priorities and activities are determined in a step by step way in order to insure that health manpower resources, both current and future, will meet, but not exceed, the effective economic demand of a population for the delivery of health services. My purpose in talking today is to describe the development and operation of the Linkage Project in South Dakota. I will describe the past efforts which facilitated its growth and the unique characteristics of its socio-political process. In addition, I will describe the development of its planning cycle and process, particularly as they apply to nurse manpower planning.

Let me briefly review the history of manpower planning in the United States. History shapes our future; it opens some options and closes others. Manpower planning is relatively new, actually less than 20 years. The impetus came with federal legislation. In 1965, the Regional Medical Programs were funded. They had as one of their principal objectives and stated purposes: to improve the use of health manpower in underserved areas. Their activities developed new knowledge and the idea of initiating linkage contracts as a means of using federal resources for systematic health manpower planning to overcome fragmentation. While this concept was initially espoused in 1972 by Dr. Endicott, then director of the Bureau of Health Manpower, the actual monies were authorized in contracts beginning in 1973. Most recently, the passage of P.L. 93-641, which was signed by the President in January of 1975, mandates that health manpower planning will be a specific part of the missions of the Health Systems Agencies and the State Health Planning and Development Agencies.

When the nationwide program of funding for health manpower projects became a reality, South Dakota was selected as the Linkage Site for Region VIII. The Linkage Project for South Dakota, included the development of manpower committee activities with regard to medicine, dentistry, nursing and associated health. Prior nursing activities within the Core Curriculum Project fed into the Subcommittee on Nursing Manpower for the Linkage Project. In January of 1975, the subcommittee staff person for the nursing component of the linkage project was hired and during the next nine months, activities and meetings were focused on involving a wide variety of people directly or indirectly involved with nursing service, nursing education and resource allocation of public monies for nursing. In November, 1975, the Nursing Needs and Resource Subcommittee was formed and by the summer of 1976, it was part of the overall committee structure of the linkage project. These activities culminated in the Nursing Component of the Health Manpower Plan by June of 1977.

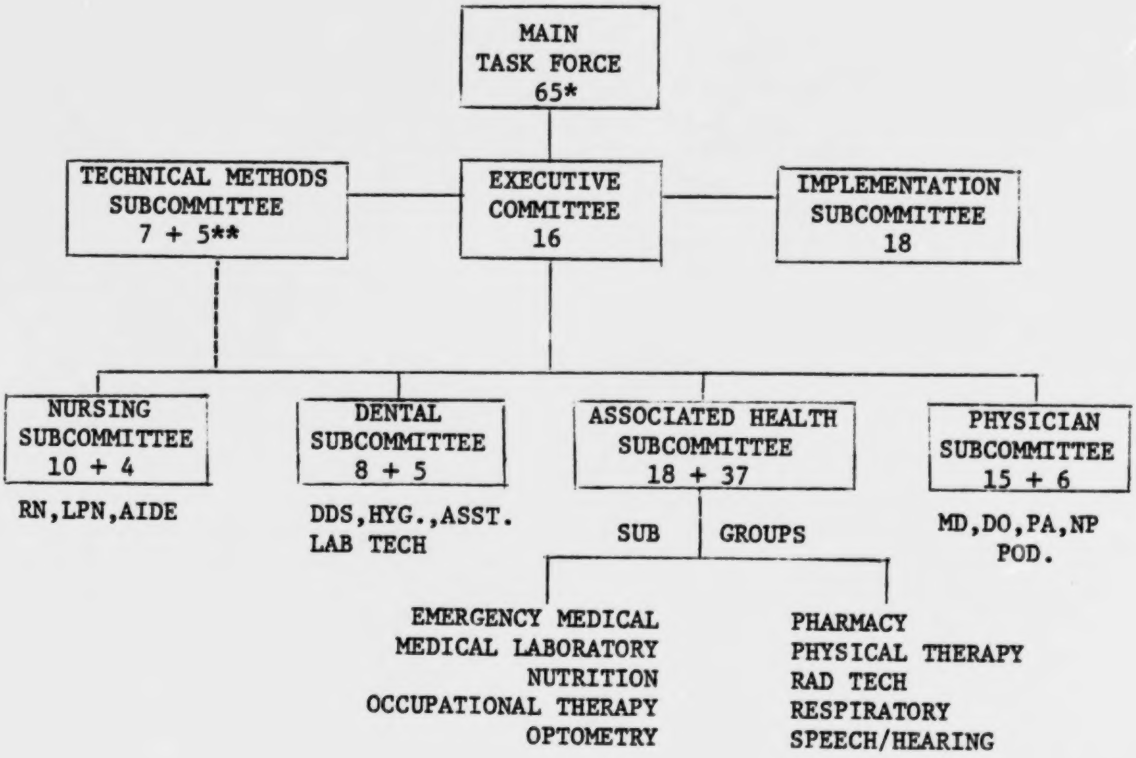
A unique process was used to produce the plan. The uniqueness of this process resulted from its involvement with people, the planning steps and the methods used. The South Dakota Linkage System was based on the premise that effective health manpower planning is only possible if all groups and individuals involved in resource allocation, decision making, and planning within the state are linked together in setting common goals and objectives and in developing solutions to health manpower problems. The integration of this wide variety of people is detailed in Figure 1, the Linkage Committee Structure. The Linkage Project is based around the main Task Force who represent a wide variety, both geographically and technically, of people throughout the state of South Dakota. In addition to the activities of the Executive Committee, the Task Force is bolstered by its Technical Methods and Implementation Subcommittee and by its various Subcommittees.

The focus of today's talk is specifically on the Nursing Subcommittee. The basic process was that the plan and recommendations developed by the Nursing Subcommittee were reviewed for technical validity and completeness by the Technical Methods Subcommittee and finally forwarded through the Executive Committee for approval and integration at the Task Force level.

The Task Force and its subcommittees were backed up by several staff people who provided the integration and activities of the various parts of this committee structure. The staff included persons with knowledge of the political/social system, skill in group dynamics, knowledge and the ability to apply economics and statistics, and a good secretarial staff. Knowledge of the political/social system was necessary in order to bring about and guide the proper integration of the diverse groups in the linkage process. Skill in group dynamics was helpful in developing an informal method of group process to facilitate the activities of all of the subcommittees. The persons knowledgeable in economics and statistics were responsible for guiding the gathering and analysis of appropriate data to assess health manpower needs and requirements in the state.

To accomplish its goals, the Linkage Project developed ten steps (see Figure 2). Each time the ten steps were completed, a cycle, a health manpower plan was produced. The specific charge, thus, for the Nursing Subcommittee was to develop a Nursing Manpower Plan following the ten steps of the cycle in the figure.

The two basic methods selected for use in the planning were Need Criteria and Combinations. The Need Criteria were value judgments of what should be the realistic nurse staffing patterns. These were based on the consensus of people who comprised the Subcommittee and who studied the previously established criteria of the Surgeon General's 1967 Committee on Nursing, input from public and private small and large institutions within the State, and other resources such as the American Nurse's Association. The Combinations methods recognized the well known fact that different kinds of nursing personnel can sometimes do the same task. It also recognized that some tasks were reserved specifically for one kind of personnel. These methods were applied to the data under the direction of the committee and an evaluation of the adequacy of nursing care was made. From this evaluation came the recommendations.


MAIN
TASK FORCE
65*
TECHNICAL METHODS
SUBCOMMITTEE
7 + 5**
EXECUTIVE
COMMITTEE
16
IMPLEMENTATION
SUBCOMMITTEE
18
NURSING
SUBCOMMITTEE
10 + 4
RN,LPN,AIDE
DENTAL
SUBCOMMITTEE
8 + 5
DDS,HYG.,ASST.
LAB TECH
ASSOCIATED HEALTH
SUBCOMMITTEE
18 + 37
SUB
GROUPS
PHYSICIAN
SUBCOMMITTEE
15 + 6
MD,DO,PA,NP
POD.
EMERGENCY MEDICAL
MEDICAL LABORATORY
NUTRITION
OCCUPATIONAL THERAPY
OPTOMETRY
PHARMACY
PHYSICAL THERAPY
RAD TECH
RESPIRATORY
SPEECH/HEARING

*MEMBERS

**NON TASK FORCE
PERSONS ADDED

122 PERSONS
1/17/78

FIGURE 1

COMMITTEE STRUCTURE

Health Manpower Planning Process

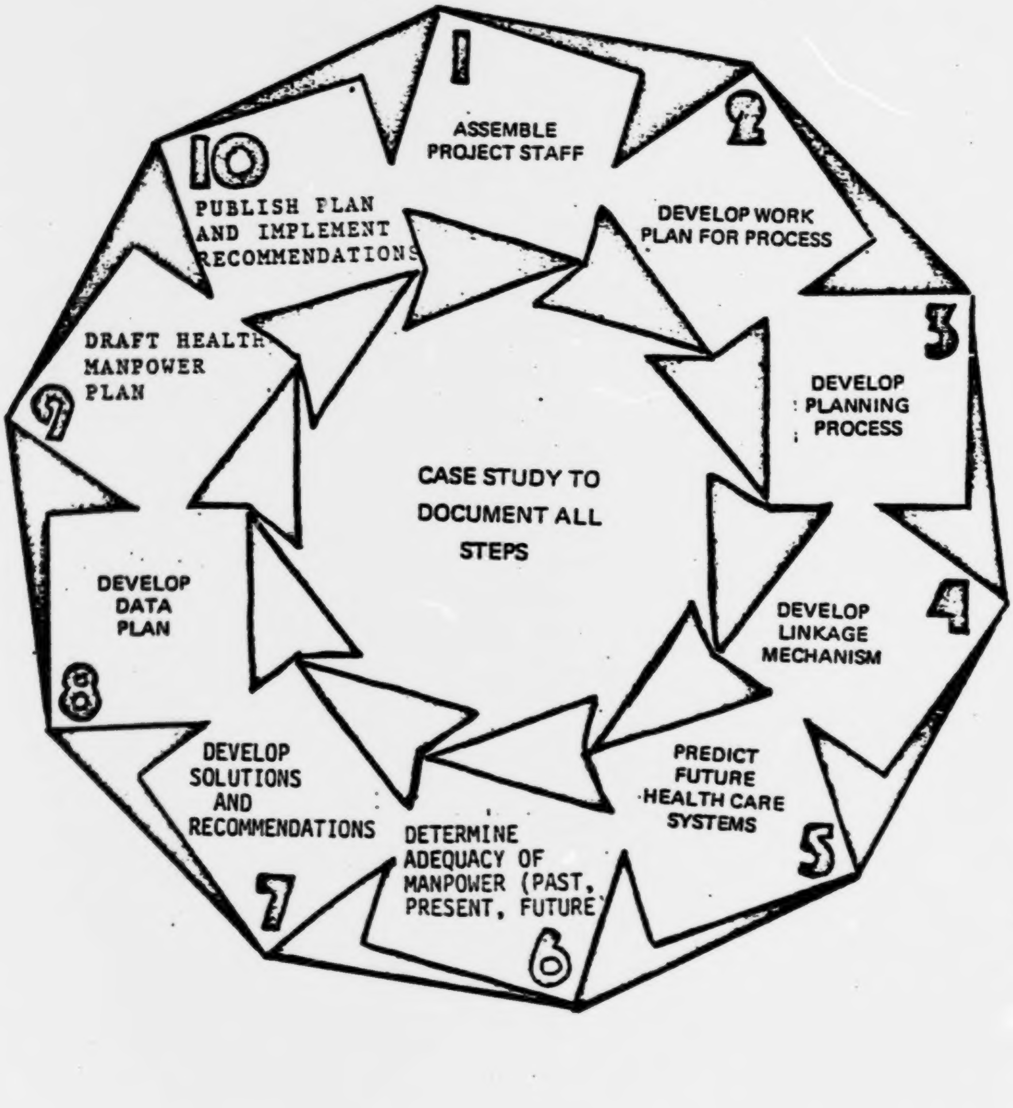

1
ASSEMBLE PROJECT STAFF
2
DEVELOP WORK PLAN FOR PROCESS
3
DEVELOP PLANNING PROCESS
4
DEVELOP LINKAGE MECHANISM
5
PREDICT FUTURE HEALTH CARE SYSTEMS
6
DETERMINE ADEQUACY OF MANPOWER (PAST, PRESENT, FUTURE
7
DEVELOP SOLUTIONS AND RECOMMENDATIONS
8
DEVELOP DATA PLAN
9
DRAFT HEALTH MANPOWER PLAN
10
PUBLISH PLAN AND IMPLEMENT RECOMMENDATIONS
CASE STUDY TO DOCUMENT ALL STEPS

FIGURE 2

The specific activities of the Nursing Subcommittee were furthermore based on a philosophy to provide direction and a focus for the methodologies, assessments, projections and finally the recommendations which were to be made. The Subcommittee, believed health to be a unique and individual relationship between the physical, psychological and social factors of each individual member of society. The Subcommittee believed nursing, in its delivery of health care to individuals in a personal, professional manner, had considerable impact on the social, physical and psychological outcomes. The decisions to be made should reflect concern for a concept of balanced health care. The subcommittee believed that forms of social action must be selected to benefit society in general and the individual in particular. Careful consideration must be given to real, future consequences of program strategies as measured in terms of the general well being of individuals in the population. The goal was increased health status, not the arbitrary rearrangement of symptoms. The subcommittee viewed intervention, both governmental and nongovernmental (within limits) as necessary and good. The form intervention should take reflects a cooperative effort between consumers, providers, planners and policy makers. Such balanced intervention is needed to pursue an increased level of health.

The integration and coordination of the people, the process, the methods and the philosophy resulted in the Nursing Component of the Health Manpower Plan for South Dakota. This planning and resource document, available for use by decision makers in education, nursing education and services, the legislature, government, and other health organizations, will serve as a guide to help direct those who must meet the nursing manpower needs of the state as they are faced by local governments, planning districts, and state and federal governmental bodies. The plan is but one of four to be produced and phased into a single comprehensive plan for the state. The other plans being developed are those for physicians, dentists, and associated health personnel.

SECTION III

MODELS AND THEIR USES

In this section four papers are presented concerning different models that can be used in planning for the need and availability of nurse manpower. In Glasser's paper, the rationale for model building is presented and several modeling approaches are selected for discussion and illustration. These approaches include: demographic models, linear regression models and probability and simulation. Glasser concludes by discussing the factors that may influence planners in their selection or choice of a specific manpower model.

Two specific modeling approaches (i.e., Lindeman; and Elliott and Athey) that are described in this section were developed as part of a major contract between the Western Interstate Commission for Higher Education (WICHE) and the DHEW Division of Nursing. The project was entitled Analysis and Planning for the Improved Distribution of Nursing Personnel and Services.* For this project several different modeling technologies were employed to make projections concerning nursing personnel for different time frames and for different geographic levels of analysis.

Lindeman's presentation discusses the National Model in which a System Dynamics approach is used to simulate factors affecting long range nursing requirements and resources five to twenty years into the future. The State Model, discussed by Elliott and Athey, was developed to assist planners in preparing estimates of the number of nursing personnel available and required over the next five years at the state and local level. Dars describes an economic modeling approach and the use of that approach in planning for nursing in New Jersey.

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*An Annotated Bibliography at the conclusion of this conference report describes the various publications produced under the contract and the mechanism by which to obtain the documents. This Annotated Bibliography lists and describes the documents referred to in Lindeman's as well as Elliott and Athey's papers.

NURSE MANPOWER MODELS: APPROACHES AND ANALYSIS

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The need for nurse manpower planning is apparent when it is noted that 2.4 million professional nurses and related occupations are currently in the labor force. Current complex nurse employment patterns will be further affected by professional practice issues, health care delivery developments as well as major demographic changes relating to women and the population served.

Prominent among the concerns in nurse manpower planning is the relationship with other health care delivery factors (e.g., physician manpower, hospital care patterns, and new professional care responsibilities). For example, the "dependency factor" of ancillary personnel to physicians has markedly risen from 4:1 to 16:1 in the last five decades. While the number of physicians is growing rapidly, this projected growth in physician supply may or may not enhance nurse manpower needs.

Limitations are recognized in the use of the classic manpower needs measures, such as the nurse to population ratio so frequently employed in health planning. This estimate is insensitive to the diversity of manpower distribution. Questions can be raised about the extent to which these ratios capture a "nursing need" assessment. Limitations in the nurse to population ratio have provided impetus for various modeling approaches.

The purpose of manpower planning is to predict needs and supply beyond the present and particularly well into the future. This paper concerns itself with various modeling approaches to nurse manpower. The rational for model building is specified, several modeling techniques are compared and contrasted, and considerations in model selection are discussed.

Rationale for Model Building

Three reasons may be invoked to justify building a model. First, a model may be developed in order to conceptualize a process. With the diversity of interests and individuals involved in planning, characterizing the component parts and their interrelationship is not straightforward. The conceptual model of the WICHE National Nurse Manpower Model (4) which specifies the demographic, education, employment and demand subcomponents, demonstrates with pictoral succinctness the complexity of nurse manpower. Although this project went on to develop numerical estimates, a model may be useful if only to reduce the problem to recognition and arrangement of operating factors.

Secondly, a model may be developed to numerically describe a phenomenon. An example of modeling for descriptive purposes is a model whose purpose is to describe the total number of nurses employed in a geographic area. Linear regression methods have been used to relate nursing needs to demographic and economic data. If this subsequent relationship is fairly representative of actual employment, the model is extended to derive estimates for nurse manpower in other geographic areas or into the future where we do not or cannot know the nursing employment experience. Often it is necessary to use surrogate measures where direct measures are unavailable.

The final reason for developing models is to explain or causally relate various factors that determine manpower needs and requirements. These models specify cause and effect in the form of mathematical equations. Thus data or estimates are required in specifying the numerical relationships among the parts. The obvious attraction of these models is the promise of knowing the likely outcome consequences of certain changes or policy decisions. These completely numerical models offer both prediction and explanation.

The characterization of models is not meant to be a hierarchy of model sophistication and thereby imply statistical virtue. Rather, each model may or may not satisfy a particular need. Furthermore, given the scarcity of data, data requirements may preclude the pursuit of complete or more elegant models.

Finally, a distinction needs to be made between models that only project and models that forecast. Projective models use current and status quo assumptions for extrapolating predictions into the future. They assume, for example, no changes will occur in the types or the utilization of manpower. Forecasting models, by contrast, take into consideration possible changes in these two dimensions, as well as others. They may therefore be considered futuristic in their assumptions and orientation.

Illustration of Modeling Techniques

Several modeling approaches are selected for discussion and illustration, and these include demographic models, linear regression models and probability and simulation techniques.

Demographic models use time trend data to follow nurse manpower, component changes, and model related population changes forward in time. An example of this is the projected supply of active and part-time nurse specified in The Supply of Health Manpower, the 1970 Profile and Projections to 1990 (20). This report uses actual data from 1970-1972 to project the numbers of active registered nurses for each subsequent year through 1990. Cross sectional rates of retention and employment experience are applied to cohorts of graduates as they enter the labor pool. Births are new nursing graduates, migration occurs when nurses leave or reenter the work force, and deaths take place upon retirement from nursing. Demographic models are projective, pushing ahead in time current patterns. The assumption is made that the major factors determining manpower will remain constant.

An example of a linear regression model is the report entitled An Analysis of the Need for Nursing Personnel in New Jersey (37). The equations look rather formidable, but the transformed data on a log scale is used in a regression approach in the traditional manner of fitting regression lines. The demand for nurses in a county, for example, may be the dependent variable. Population counts, per capita income and hospital visits might be independent variables. Adjustments in the data are carried out before projecting trends. The results are specified as a projected demand line on a graph with quasi-confidence intervals around that line. Projection of the supply line can be superimposed in the same graph to compare supply and demand projections into the future.

For purposes of estimation, these regression models have the advantage of making few assumptions about the underlying parameters except that of a linear relationship. No argument is made about the general utility of the regression approach. While these models may be, and in fact are, used to making policy decisions, these models are really descriptive ones generally relying heavily on indirect measures. Several critiques are in order. Published reports often omit the R^2, a statistic which reports the amount of variation explained by variables in the model. Readers then do not know how well the model fits the observed data. Many projection models assume implicitly that while there may be future perturbations, the model estimates are measured without error. The potential "wobble" is often not adequately described. The consumer of manpower study results should not be expected to be aware of these technical qualities. Finally, interaction effects among independent variables may often be ignored when they are significant.

Probability models and models simulating some phenomenon may be undertaken by deriving a set of deterministic equations between model components that are governed by probability relationship (i.e., a mixture of deterministic parameters moderated by chance or unknown effects). Both deterministic and probablistic approaches share the common base of attempting to quantify step by step a conceptual model of nurse manpower as it operates in reality. An example of a detailed probability simulation is the Population Simulation Model (POPSIM) constructed by the Research Triangle Institute (39).

The POPSIM model first views an entire community of people as well as subgroups, considering births, deaths and other vital statistics. In the second step, the hospital utilization experience is applied following specific probability functions that approximate observations in practice. Utilization distributions are applied to the population over time through the simulation process to arrive at an estimate of the number of hospitalization days. In the final step, hospital manpower requirements are incorporated to derive health services requirements in personnel and facilities.

The POPSIM model has the following advantages: (1) it allows variability to enter as a statistical property of the model; (2) it uses available data at all steps in the process; (3) it can encompass conceptual elements in projecting and predicting phenomenon; and (4) it is amenable to examining changes by altering factors in the component parts. This model is available as a statistical package. The major disadvantages are its complexity, the resources required to use the model, the difficulty in obtaining the data, and the problem of appraising how well the model fits the data.

Selecting a Model

The choice of a specific manpower model is determined by a set of interrelated considerations of purpose, people and procedures. The purpose of the model is one of the major considerations. If the purpose is to determine nursing supply, attention is focused on nursing education and detail is given to the type of educational preparation as well as the type of specialization. An interest in labor force participation generates attention to dropout rates, unemployment and vacancy rates. Needs assessments for nursing requirements often uses community and population profiles and an epidemiological approach. If occupational patterns are of concern, following selected cohorts of nurses over time may be the method of choice.

The author is often influential in the type of model selected. The technical training through educational exposure and the academic discipline of the investigator is often the determinant of the major approach. Investigators tend to use the tools with which they are most comfortable.

The procedure selected will impose its own vigor or inborn limitations. Can the set of assumptions be met? How sensitive is the model with respect to measurement error? What is the match between the method and the phenomenon it purports to measure? There are also constraints in terms of resources. The availability of computers and various software programming capabilities will influence efforts in model building. Time and personnel are commodities that also must be realistically appraised in selecting a modeling technique.

Finally, the availability of data determines model selection. Models have various data requisites. Ideally, the data necessary for the quantification of factors should be available without recourse to surrogate measures. Some attempts to improve data are the minimum basic data sets as specified in the Guide to Data for Health System Planners (25). Licensing data and employment surveys, career studies, and some specific experimental studies provide additional data sources.

I have discussed several models particularly to emphasize their dissimilar analytic base. Often we assume that one model is as good as another. The models presented make rather different assumptions and require different data bases. Selection of the model for use in a particular situation will depend on the purpose, the assumptions willing to make, and resources available.

A NATIONAL MODEL: EXPECTATIONS, METHODOLOGY AND USES

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University of Oregon

EXPECTATIONS OF A MODEL

At the onset of the Analysis and Planning Project (47) in 1975, a group of nursing, health care and education leaders from the West was brought together to discuss what type of models should be developed that would be useful in dealing with some of the issues concerning the supply, demand, utilization and distribution of nursing personnel. This group of nurses identified five areas of expectations that they felt a nursing manpower model should address. Their expectations for a model were as follows:

1. Nursing needs a planning model that reflects the changing health care delivery system. They felt that a model that was just a picture of the present would not be useful because of the rapid kinds of changes occurring which affect the delivery system.

2. The model should emphasize feedback loops and reflect that interaction between the various components of the model. Using general system's terminology, a change in one part of a system affects the other parts of the system. The group felt that a model which could not link the component parts together would not be desirable.

3. A model was needed which could serve as a tool for evaluating policy. Although the group identified the need to project numbers of nurses required, they wanted assistance in dealing with some of the qualitative issues which affect the supply and demand of nursing personnel.

4. They wanted a model that would take a long-term view. They felt that the time frame for the model should be far enough into the future so that nurse planners could take the appropriate actions suggested by the modeling effort. By selecting a model with a long-term view, problems and requirements concerning nursing personnel could be anticipated and interventions initiated before the crises occur.

5. The model should build on data currently not available as well as using currently available data. This group of nursing leaders knew the types of data available, were using available data to make decisions within their jobs, and were aware of the limitations of existing data. Their feeling was that if they limited themselves to currently available data they would not have a helpful model for making projections concerning nursing personnel over time. They wanted a model that would build in some of their intuitions, their own experiences with the real-world of nursing and the health care system and deal with these assumptions and intuitions in a systematic way.

This group of nurses reviewed and selected the System Dynamics modeling approach as the methodology which they felt would meet their expectations of a model. The model developed is referred to as the National Model since the country as a whole is the unit of analysis. The model is concerned with changes taking place and likely to take place in nursing and in health care generally. It focused on the impact these changes will have on the supply, demand, and distribution of nursing personnel and services over the next few years. The model was developed as a tool for policy-makers. It can be used for evaluating alternative policies and programs rather than for precisely predicting future developments.

What is the System Dynamics Modeling Approach?

The National Model was developed using a set of techniques referred to as System Dynamics. A System Dynamics model can best be described as a model in which the relationships within it are assumed to be causal. The model describes a set of causal relationships responsible for changes in variables of interest to policy-makers, such as those variables characterizing the supply of, demand for, and distribution of nursing personnel and services. Causal relationships contained in the National Model describe, for example, the effects of a particular graduation rate on the number of nurses actively employed, or the impact of wage levels on the number of nurses hired during a year to work in a certain employment setting.

As can be anticipated, there are a large number of relationships and complex interactions among the variables which are involved in attempting to describe the pattern of changes that will occur over time. These causal relationships are represented in an equation format. A computer is then used to take on the work of calculating how the system will respond over time to changes induced in it. "What if?" questions can then be explored by making changes in the Model's relationships to represent the implementation of various policies and programs or the impacts of external forces. A "What if?" question about the impact on nursing requirements of a National Health Insurance program, for example, might be represented in the Model by revising upward the Model's assumptions about the demand for care in various health care setting. The computer is used to determine how the nursing system would behave as a result of these changes.

The Model Development Process

The National Model was developed with the active involvement of a task force that included representatives of nursing service, nursing education, comprehensive health planning, the Division of Nursing in DHEW and WICHE's nursing program staff. The task force assisted in conceptualizing the structure of the Model and they provided estimates of important relationships when reliable data were not available. Thus the task force members were, in some instances, the principal source of quantifying the causal relationships contained in the model for which no data existed. The task force members responded to a series of Delphi survey questionnaires in order to quantify certain relationships. Though these data were "soft" (i.e., based on informed estimates rather than on research findings), these judgments from the task force members were used in the Model to avoid disregarding causal relationships that were considered to be important, but for which no data existed. Available data were, of course, used whenever possible.

Overview of the National Model

The National Model's structure contains four highly interrelated and interdependent "sectors." These sectors which are depicted in Figure 1 are:

1. Nursing education - representing the factors affecting the number of students in each major type of educational program and the graduation rates from these programs;

2. Nursing employment - representing the factors affecting the number of nurses employed in each setting and various characteristics of employment in each setting, such as nurses' wages and nurses' roles;

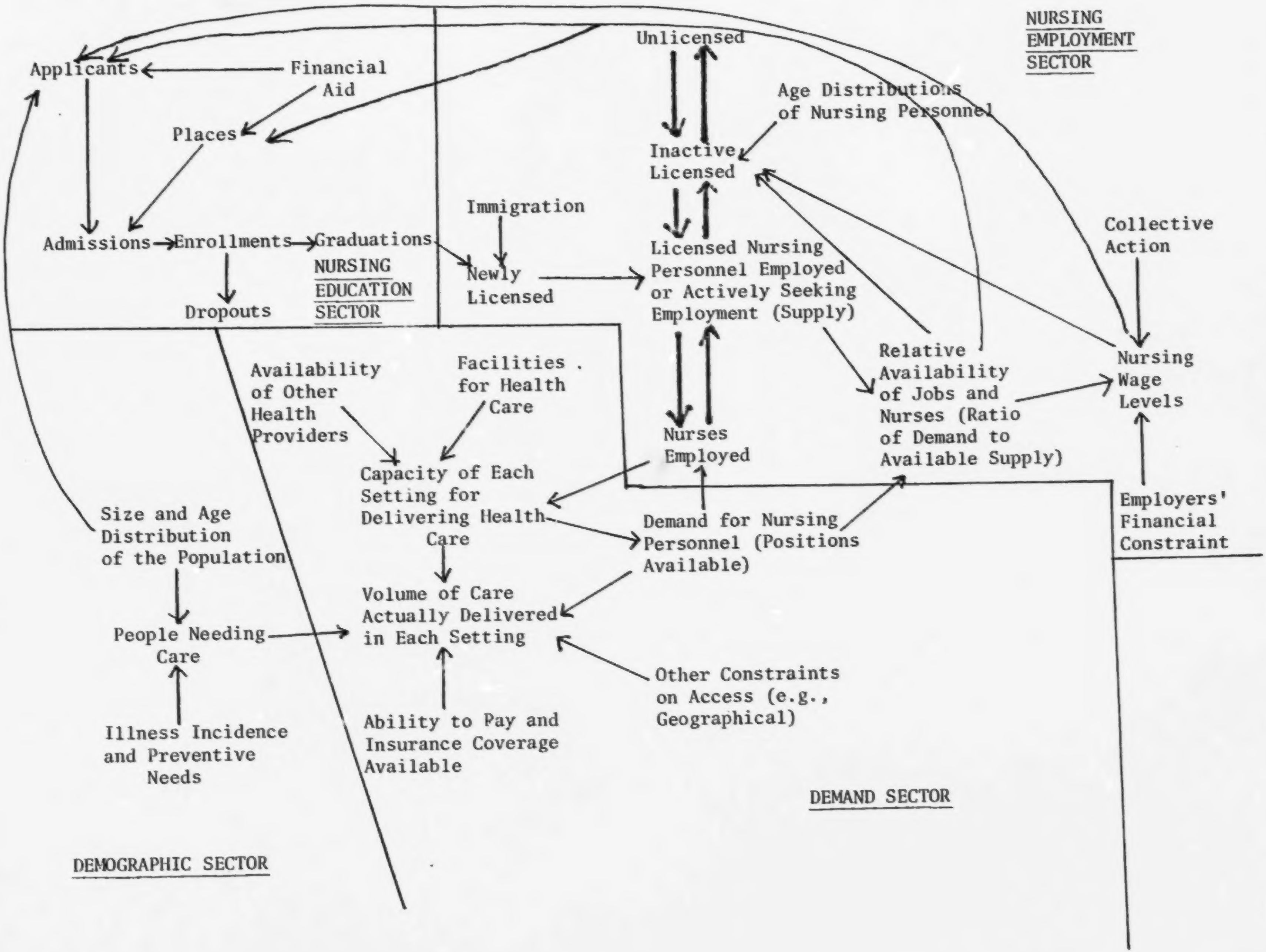
3. Demand - representing the health care provided in each sector of the health care delivery system, the nursing needs, and nursing jobs available in each employment setting;

4. Demography - representing key demographic characteristics of the total population that impact on other sectors of the Model, principally the demand sector.

Some of the key relationships shown in Figure 1 can be described as follows. The number of nursing students being graduated from educational programs, along with other factors, affects the total supply of licensed nurses at each level of educational preparation. The numbers of graduates depend on the numbers of places in programs at each level and the number of applicants for these programs. Nursing Employment in each setting (e.g., hospital or ambulatory care) depends on both the number of jobs available and the number of nurses willing to take these jobs (i.e., on both the demand for and supply of nursing personnel). The health care provided in each sector of the health care system, nurses' wages, nurses' responsibilities, and other factors affect the employers' desired staffing patterns and the number of nursing jobs available in each setting. Some important influences on nurses' willingness to take available jobs include nurses' wages, nurses' roles and responsibilities, the match between qualifications of available nursing personnel and requirements of available jobs, and the location of the jobs relative to where available nurses live. The volume of health care delivered in each setting is affected by the demographic characteristics of the population, such as, the number and age composition of the total population, care requirements for people in each age group, the financial and geographical accessibility of care, and the attitudes of people toward seeking care. (For a more detailed description of the National Model, see Bergan and Hirsch (4)).

The model also differentiates among the need for nursing personnel (the number that would be desirable to employ to serve the population's health care needs), the demand for nursing personnel (positions made available by employers,

FIGURE 1: OVERVIEW OF THE NATIONAL MODEL


NURSING EMPLOYMENT SECTOR
NURSING EDUCATION SECTOR
DEMAND SECTOR
DEMOGRAPHIC SECTOR
Applicants
Financial Aid
Places
Admissions
Enrollments
Graduations
Dropouts
Immigration
Newly Licensed
Unlicensed
Inactive Licensed
Age Distributions of Nursing Personnel
Licensed Nursing Personnel Employed or Actively Seeking Employment (Supply)
Nurses Employed
Relative Availability of Jobs and Nurses (Ratio of Demand to Available Supply)
Collective Action
Nursing Wage Levels
Employers' Financial Constraint
Availability of Other Health Providers
Facilities for Health Care
Capacity of Each Setting for Delivering Health Care
Demand for Nursing Personnel (Positions Available)
Volume of Care Actually Delivered in Each Setting
Other Constraints on Access (e.g., Geographical)
Ability to Pay and Insurance Coverage Available
Size and Age Distribution of the Population
People Needing Care
Illness Incidence and Preventive Needs

given the population's actual utilization of and perceived need for health care and various constraints on those employers), and the number of nursing personnel actually employed (given positions available and nursing personnel available and willing to take those positions).

Recommendations Concerning the Use of the Model

The National Model can be appropriately used in various ways:

-The model can be used as a tool to assist in making policy decisions. It can be used for evaluating alternative policies to determine their effects on nursing supply, demand, and distribution.

-It is a framework that assembles the interrelated set of factors affecting nursing that allows participants in a planning process to think through the impact, over time, that changes in one or several factors have on the other factors.

-The model was developed based on national data and can be used only at the national level. Modification of the model for use at the state is quite feasible, but this adaptation has not been carried out. The adaptation would involve representation of certain additional factors, such as those affecting the migration of nurses in and out of a state or local area.

-The National Model's major value lies in its ability to project the relative impacts of various policies and changes in nursing and health care over time. It allows planners to assess the effects on nursing of new developments that might occur.

A STATE PLANNING MODEL*

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and
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Purpose

The State Model (18) provides an analytical framework for projecting estimates concerning the number of nursing personnel resources** available and the number required*** over the next five years. The model projects the number of personnel by type of license (R.N. or L.P.N.), by employment setting, by position and by educational preparation of the R.N. This level of specificity enables the model to make enumerations that incorporate the growing diversity of nurses. Too frequently, planning studies assume that "a nurse is a nurse is a nurse," and little effort is made to differentiate R.N.s by their educational preparation or by knowledge and skills in particular areas of practice, acquired either through education or experience. It is felt that the kind of sensitive analysis contained within the State Model would be extremely useful to HSAs in assessing the distribution of nursing.

As the State Model's name implies, the estimates are prepared from a state planning perspective. For the State Model to be sensitive to geographical distribution issues germane to both state and national planning, it must focus on an appropriate substate unit of analysis. Therefore, the model was designed to operate at a national, regional, state, or substate level.

The State Model was developed with input from members of a task force, from representatives from the states that participated in the field development and in the pilot testing of the model and from the members of the National Panel of Expert Consultants.

Requirements Planning Process and Projections

Figure 1 presents the analytical framework for projecting the need for nursing personnel one to five years into the future. The framework is composed of essentially three components:

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* An Annotated Bibliography at the conclusion of this conference report includes the references from this paper.

** The term resources refer to the number of nursing personnel expected to be actually available rather than the number qualified for employment.

*** The term requirements refers to the number of nursing personnel who will be needed to meet stipulated health care goals.

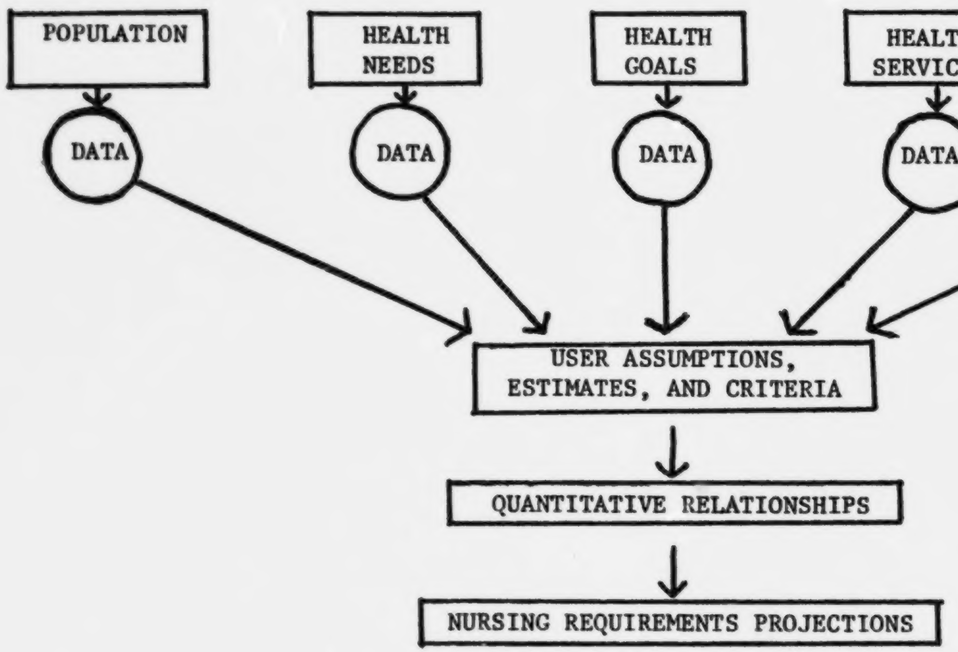
POPULATION
HEALTH NEEDS
HEALTH GOALS
HEALTH SERVICES
STAFFING PATTERNS
DATA
DATA
DATA
DATA
DATA
USER ASSUMPTIONS, ESTIMATES, AND CRITERIA
QUANTITATIVE RELATIONSHIPS
NURSING REQUIREMENTS PROJECTIONS

Figure 1.

OVERVIEW OF NURSING REQUIREMENTS PROJECTIONS[1]

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[1] Overview of Nursing Requirements Projection Scheme as modified by Panel of Exper Consultants, Analysis and Planning for Improved Distribution of Nursing Personnel and Services, Western Interstate Commission for Higher Education.

1. A requirements planning process consisting of five major steps:
   a. Differentiating the client population
   b. Assessing the health needs of the population
   c. Choosing realizable health goals
   d. Developing a health strategy using a set of health services
   e. Planning appropriate staffing patterns

2. A data base to facilitate the planning process

3. A set of mathematical equations and/or computer programs for estimating state-level projections of nurses needed.

The relationships between the components can be described in the following way. Planners and participants would first proceed through the steps in the requirements planning process and address the planning questions raised in the process. Recent data are referred to in addressing the questions. After full consideration of the questions raised in going through the planning process, the participants then make certain assumptions about such areas as changes in the health care delivery system, in staffing patterns and in utilization over the next five years. These professional judgments are used as input to make projections about the number and types of nurses needed in the future. An overview of the steps in the requirements planning process follows.

Differentiating the Client Population

The first decision point in the requirements planning process deals with the population that is being served. Data on key demographic variables such as age, race/ethnicity, sex, income, educational attainment and occupation are considered. The decision point relates to how the population should be differentiated so that their health needs might be better assessed. A major purpose of the discussion and data is to identify what health needs are being unmet and what specific population subgroups are especially affected.

Assessing the Health Needs of the Population

Closely allied to differentiating the population is the assessment of the health status of the population in terms of quantitative health status indicators. These include a variety of morbidity/mortality statistics as well as natality data.

Choosing Realizable Health Goals

The next decision point relates to the identification of a specific set of health goals, or if general health goals already exist, the adoption of these into a form more meaningful for planning purposes. These goals form the basis upon which subsequent decisions about health services and nursing utilization are made.

Developing a Health Strategy

Once health goals have been determined, the question of programmatic thrusts are considered. The most immediate question is how health programs might be conceptualized. Such health programs may be viewed in terms of inpatient, ambulatory, emergency, outreach settings or in terms of prevention and detection, diagnosis and treatment, habilitation and rehabilitation maintenance, or support services.

Planning Appropriate Staffing Patterns

The final set of decisions deal with the interrelationship of nursing personnel utilization patterns within health services. Additionally, in the nurse staffing area, attention must be given to the crucial issues that are facing the nursing community with regard to the educational preparation of registered nurses and expanded roles for nurses. The necessity of considering nurse staffing in the context of the roles of other health professionals in the delivery of health care must also be considered.

Resources Projection Framework

The resources projection framework follows a basic flow process with time as an important consideration. The process begins with an understanding of the state's nursing resources that are currently available, adds new resources that are expected to enter the state during the time of consideration, and subtracts the number of currently available resources that are expected to leave the state's active nursing population. The newly derived statistic is the estimated number of nursing resources that the state will have available in the next planning period.

The resources planning framework is organized as a flow procedure describing how certain forces interact during the passage of time to influence an increase of decrease in resources. Examples of some of the factors which influence the number and types of nurses available for employment are: the various educational programs currently in existence; consideration of the active and inactive nurse, migration patterns in and out of the area, and the licensing process.

Data Base

Given the complexity of the State Model, the data used to support both the requirements and resource components are assembled from a number of different data sources. In order for estimates of nursing personnel to be prepared for every state and at the substate level, the data are national in scope with the unit of analysis for each data tape being the county level. Data sources include the following: the American Nurses' Association R.N. and L.P.N. Inventories, the National League for Nursing's Faculty Census and Annual Survey of Schools, the American Hospital Association's Annual Survey, the Survey of Nursing Personnel in Hospitals, the Division of Nursing's Survey of Public Health Nursing and Employment Opportunity Study for Newly Licensed Nurses, data files from the National Center for Health Statistics (i.e., the Master Facility Inventory, the Health Interview Survey and natality and mortality statistics) and data files from the Census Bureau.

These data sources have been assembled into one integrated data base, and profile reports have been prepared that show what kind of data are available at the state-level. These profile reports contain data specifically useful for implementing the requirements and resources planning process described with regard to the State Model. The two documents that have been prepared concerning the data base are: (1) the User's Manual for the Profile Data Base (see Smith and Malanowicz in Annotated Bibliography); and (2) the User's Manual for the Profile Report Generation System (see Makowski and Smith in Annotated Bibliography). The document that was prepared which described the State Model is entitled Nursing Resources and Requirements: A Guide for State-Level Planning (18). A more complete description of these documents and other reports stemming from the Analysis and Planning Project is found in the Annotated Bibliography at the conclusion of this conference report.

ECONOMIC MODELING

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State Department of Education, New Jersey

In reviewing the objectives of this conference, I think I could be most helpful by describing both the environment in which the planning process takes place as well as the technical procedures that are used.

Planning Environment

The charge to the New Jersey Department of Highed Education to undertake the task of health manpower planning is based upon two provisions of the law that created the Department. Specifically, under the provisions of the Higher Education Act of 1966, the Department and its Board are required to first develop and maintain a long range master plan and second, to review and approve all publicly supported educational programs at the public, and most of the private institutions.

The Office of Health Professions Education and later the Office for Health Manpower within the Department of Higher Education, undertook the development of a master plan in the health area. In 1973, the Board approved the first Health Professions Education Master Plan (HPEMP). That plan is based upon the following five objectives:

1. To set guidelines for a network of educational programs to meet the changing needs for health care in the State.

2. To end the fragmented, unsystematic approach to creating programs often as a response to crisis situations or the enrollment demands of a particular institution of higher education or the unexamined demands of professional groups.

3. To create a research instrument which will assess current supply, utilization rates and the projected demand for health professions by 1985.

4. To open institutional and public discussion on major health issues and recommend their possible solutions and develop appropriate policy as they impinge upon the responsibilities of institutions of higher education.

5. To establish a framework within which an effective statewide advisory agency can assist the Department and Board of Higher Education in planning and developing collegiate level health professions education programs.

While the HPEMP addresses a wide variety of issues (e.g., the team concept; accreditation, licensure and certification; continuing education; and regionalization and institutional cooperation in the use of educational resources).

it also is primarily concerned with the quantitative manpower and specific qualitative programmatic needs for a variety of health manpower occupational categories. From a planning point of view, it is important to assess whether or not additional manpower is needed prior to the approval of costly health professions educational programs. A major section of the Plan hence is devoted to establishing estimates of the types of health manpower which would be required in New Jersey to staff an effective health care delivery system.

Wherever possible in the development of the plan, the question of manpower needs was addressed quantitatively. This required the development of an initial data base and a projection methodology. Of the 25 occupations addressed in the Plan, baseline data were available for only 19 professions. Much of the data were drawn from the various associations and the census. While important questions were raised about the data's completeness, it was the best available information. Accordingly, these data were incorporated into the forecasting equations.

Nurse Projection Models

The Department has used two models in projecting the need for nurse manpower. An optimization model has been used to address questions of the need for physician's assistants and nurse practitioners and an econometric model has been used to determine the more general need for nursing personnel. The reports discussing in greater detail their application and results are available from my office on request. What I will do for the balance of my discussion is outline the essential characteristics of these models.

Optimizing Models

Such models begin by defining a set of objectives and then determine how these objectives can best be achieved. For example, in the New Jersey study, we were interested in the most efficient combination of labor inputs that could be used to deliver 24 of the most primary care services (description of the model available upon request).

Once the least cost combinations of labor inputs were found, projections of primary care services were estimated for 1975, 1980, and 1985. These demand levels were applied against the production input solutions of the model and then converted into manpower estimates. The results are displayed in Table 1.

Other Models

In order to project the more general need for nursing personnel, an econometric model was developed to project future nursing requirements and a labor force attachment model was used to project supply.

Econometric models have their basis in economic theory. This theory about human motivation defines the relationship between different sets of variables.

TABLE 1. DEMAND PROJECTIONS FOR PHYSICIANS, NPs AND PAs IN AN EFFICIENT OFFICE-BASED, PRIMARY CARE SYSTEM: 1975-1985

Year	Current Practice+		Hypothetical Situation		
	Physicians	NPs	Physicians	NPs	PAs
1975	4,294	1,158	2,557	563	471
1978*	--	--	2,941	647	542
1980**	5,453	1,471	3,247	715	598
1985**	6,925	1,868	4,124	908	759

*The 1978 projections reflect manpower requirements after a 15% increase in primary care service demand has occurred since 1975.

**The demand projections developed by the Office for Health Manpower indicate a 27% increase in primary care demand per five year period.

+Optimal demand estimates based on current usage of health manpower.

For example, economic theory would suggest that the demand for nurses is a derived demand and is dependent upon the demand for health care. In turn, the demand for health care would be dependent upon such variables as the price of medical care, per capita income, population, and such variables as the population's age and health status.

Once the theory suggests the set of explanatory variables, statistical estimating procedures (i.e., least squares) and tests of the validity of the estimates (analysis of variance techniques) are developed and test specific relationships between the variables in the model.

The New Jersey econometric model is based upon a single regression equation relating the distribution of nursing personnel (i.e., the dependent variable) by county to such independent variables as income, population, the average age of the population and hospital service utilization. For the variables that are included in the model, the a priori hypotheses are that the demand for nurses will be positively correlated with income, population, age and hospital utilization (description of the model available upon request).

The projected demand estimates, which are derived from the regression model once the values of each of the independent variables are projected, are adjusted to reflect two additional forces that affect the level of nursing utilization. The first adjustment relates to a measure of current unmet need. Regression models of the type presented above do not address the issue of whether the existing health care system is in a current equilibrium (i.e., current supply = current demand). It is assumed, however, that a disequilibrium exists (i.e., there is an existing shortage of nursing personnel). In order to quantify this imbalance, data provided by the American Nurses' Association on unfilled budgeted positions were used to estimate unmet need. This study indicated that within a hospital setting, an additional 5 percent of the current nursing workforce was needed to fill vacant budgeted positions and to provide better health care. The 5 percent rate is used as an index of overall unmet need for all practice settings and it is calculated as a single increase over the entire 10 year projection period. A second factor that will influence both the demand for nursing services and the demand for nurses is national health insurance. For the purpose of this projection, we estimate the impact on the basis of the average effect of the two, to be 5.7 percent. This single increase is projected to occur over the 1980-1985 projection period. The labor force attachment model was used to project the supply of nurses. There are two sources of additions to the basic nursing supply: graduates from our own nursing programs who remain to practice in New Jersey, and nurses who obtain a license through endorsement (i.e., hold an approved license in another state). With respect to the first source, total enrollments increased between 1973 and 1975 by approximately 9 percent per year and the number of graduates increased by 13.5 percent per year. Specifically, graduates from associate programs increased by 16.1 percent per year, from diploma programs by 9.5 percent per year, and from baccalaureate programs by 16.9 percent per year.

With respect to the second source of nursing supply, data provided by the Board of Nursing indicate that the number of licenses by endorsement increased from 1,650 in 1973 to approximately 2,100 by 1975. In percentage terms, the growth rate from this source is 20 percent per year.

It should be emphasized that the projected rates of growth of graduates from the State's programs are less than historical rates. The supply model projects increases in the number of associate degree graduates at 12 percent per year, 7 percent for diploma graduates and 12 percent for baccalaureate. This compares with actual annual rates of increases of 13.5 percent at the associate degree level, 1.5 percent for graduates of diploma programs and 16.5 percent for baccalaureate graduates. It is reasonable to use lower rates of increase in light of the fiscal problems facing many institutions of higher education as well as many hospitals.

Finally, in order to determine whether this is a projected shortage or surplus of nursing personnel, the forecasted values of supply and demand are compared at specific points in time. The results of such comparisons are presented in Figure 1. The data indicates that the supply and demand models are projecting a surplus of nursing personnel.

Our activities with respect to data and methodology did not stop with the Board's approval of the Master Plan. It became quite clear that because of weaknesses in the existing data base, the projections should be viewed as suggestive of future manpower requirements and not as fixed quantities. Furthermore, it was recommended that there should be a continuing process of updating and improving the data base for health manpower projections, including development and encouragement of the use of comparable and comprehensive registers of personnel. In addition, the projection model was to be continuously refined, so as to account for newly relevant variables not included in the first projections. For the past five years, the Department of Higher Education, with the assistance of a linkage contract from the Bureau of Health Manpower, DHEW, and working in conjunction with the Department of Health, local planning agencies, educational institutions and other groups, has worked towards establishing a system in which there is a consistent flow of health data projections between the collectors of information, the planners and the health manpower policy makers. Figure 2 represents the connections that exist between these various groups.

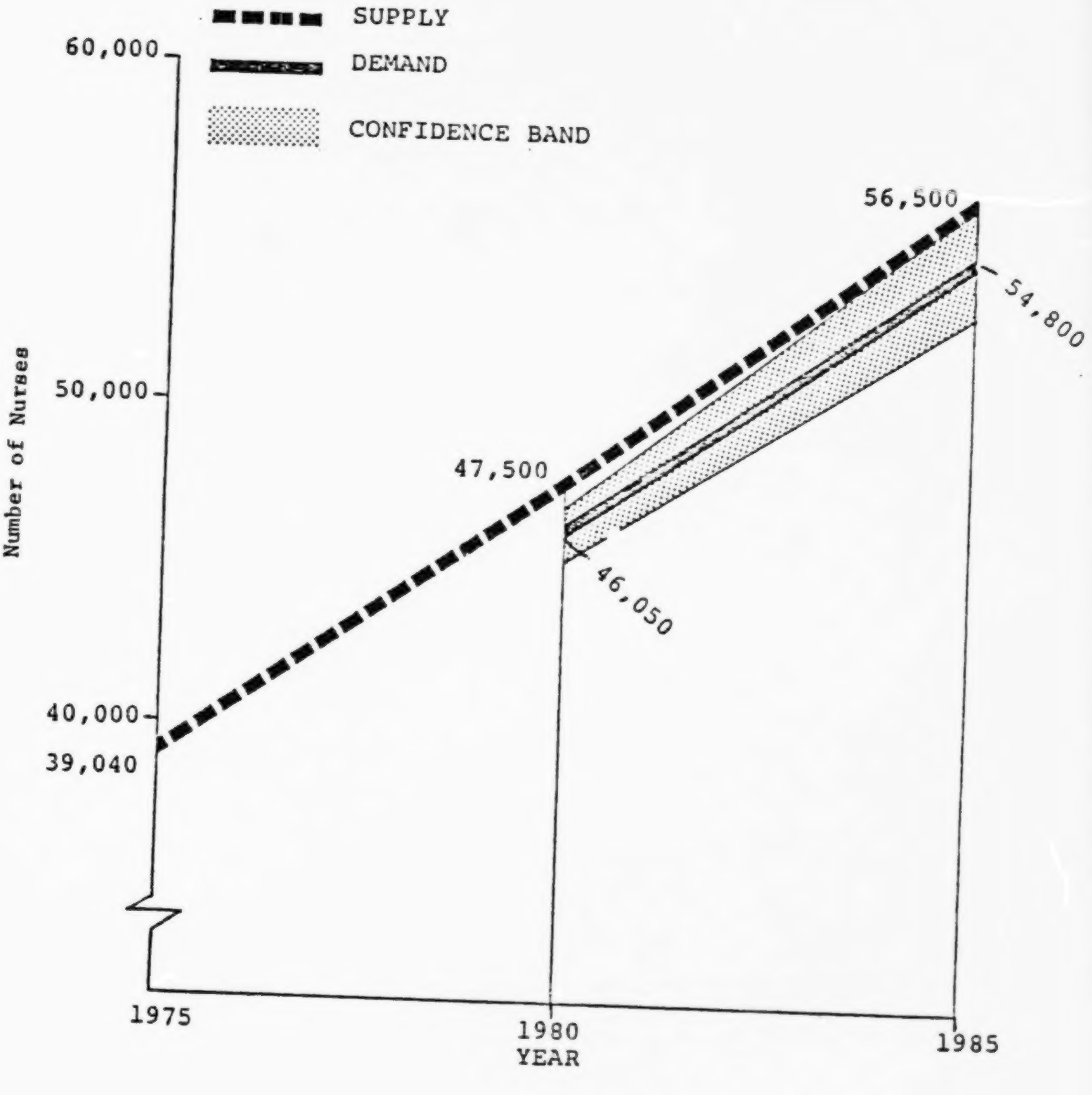
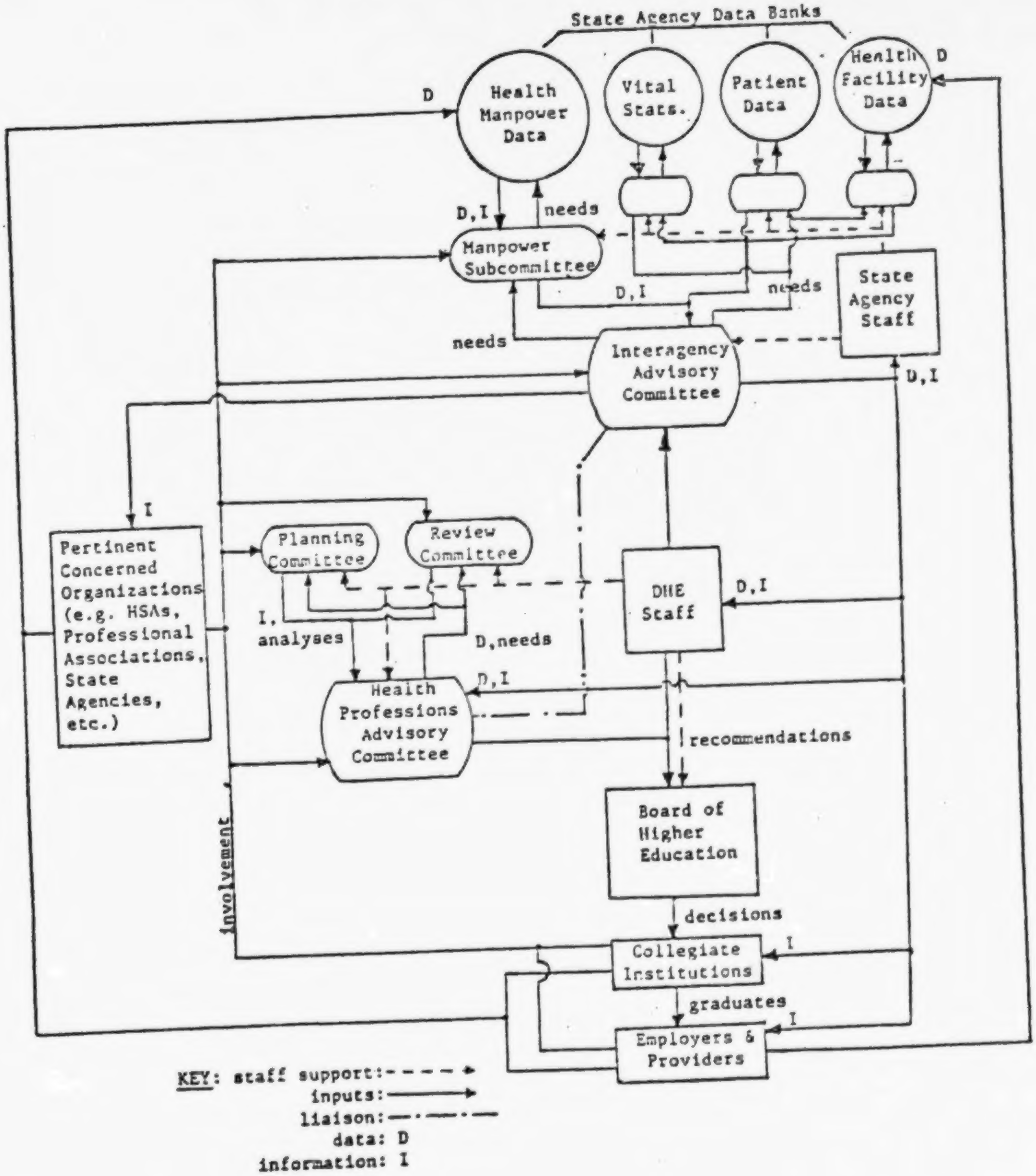


FIGURE 1

COMPARISON OF SUPPLY AND DEMAND FORECASTS


State Agency Data Banks
Health Manpower Data
Vital Stats.
Patient Data
Health Facility Data
D
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needs
Manpower Subcommittee
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needs
State Agency Staff
needs
Interagency Advisory Committee
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I
Pertinent Concerned Organizations (e.g. HSAs, Professional Associations, State Agencies, etc.)
Planning Committee
Review Committee
DHE Staff
D,I
I, analyses
D,needs
D,I
Health Professions Advisory Committee
recommendations
Board of Higher Education
decisions
involvement
Collegiate Institutions
I
graduates
I
Employers & Providers
KEY: staff support:
inputs:
liaison:
data: D
information: I

FIGURE 2

1976 LINKAGE SYSTEM WITH STATE AGENCY

SECTION IV

SOURCES OF DATA AND INFORMATION CONCERNING NURSING

In this section, sources of data and documents which are available to health and nurse planners are described. Over the past several years, the passage of several pieces of federal legislation, particularly the National Health Planning and Resources Development (P.L. 93-641) and the Nurse Training Act of 1975, Part D (P.L. 94-63) mandated the need for a comprehensive and integrated data base.

Some of the suggested data needs indicated by the legislation include information regarding:

1. Measures of the health status of residents within a geographic area (especially health service area).
2. Indicators of the use of the health care delivery system.
3. Measures of the effectiveness of the health care delivery system.
4. The number, level of educational preparation and specialty acquired by nursing personnel as well as other health manpower.
5. Measures of the effect of environmental and occupational exposure factors on immediate and long-term health conditions.

As planners have been examining available data described in the legislation as being necessary for effective health planning, data gaps and omissions have become readily identified. Also some of the data is difficult to collect, such as health status data. With the development of analytical models as tools for evaluating and projecting the supply of and requirements for nursing personnel, other data needs have emerged. These include ready access to data which has been already collected and data which is current or timely.

Losee describes current efforts of the Cooperative Health Statistics System (CHSS) and suggests ways it may be used in gathering and analyzing data for manpower planning. Meadows discusses the Nursing Component of the National Health Planning Information Center (NHPIC). Both of these are excellent sources of data.

THE COOPERATIVE HEALTH STATISTICS SYSTEM--
ITS CURRENT STATUS AND POTENTIAL

Garrie Losee
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Cooperative Health Statistics Systems
National Center for Health Statistics

The purpose of this paper is to describe the Cooperative Health Statistics System (CHSS), both its current stage of development and its potential, particularly as it relates to planning and research on nurse manpower. The National Center for Health Statistics (NCHS) has been delegated by authorities under P.L. 93-353 the development, with federal, state and local health agencies, of the CHSS, providing the federal share of the costs of the CHSS, providing technical assistance, and developing model laws dealing with confidentiality and conformity of health data.

The Cooperative Health Statistics System is an integrated system of cooperating organizations at national, state and local levels sharing a uniform health data framework and dedicated to the sharing of health data among users and producers at national, state and local levels.

Key to the CHSS concept is the development of uniform sets of health data and their collection, processing, and timely dissemination according to uniform standards to insure high quality of data. At the present time health data has been classified into seven components: vital statistics, health manpower statistics, health localities statistics, hospital care statistics, ambulatory care statistics, long-term care statistics, and population-based health statistics. Priority has been put on implementing the first four of these components in all states as rapidly as possible. There are now 38 states implementing the vital statistics component, 25 implementing the health manpower and health facilities components and 10 states implementing the hospital care component. The principal deterent to implementing all components in all states has been inadequate dollar and personnel resources. The NCHS plan calls for the implementation of the vital statistics, health manpower and health facilities statistics in all states by 1980.

I would like to focus now on the manpower and facilities components and their relation to your interests in planning and research on nurse manpower. The states implementing the manpower component have been collecting data on at least a biennial basis for the 13 health occupations licensed in all states, including registered nurses and licensed practical nurses. The states implementing the facilities component have been collecting annually data on the characteristics of hospitals, nursing homes, and, in some states, other in-patient health facilities.

The organizations participating in the CHSS at the state level are usually within the state's department of health. However, this is not a requirement and NCHS policy is to accept as the CHSS state agency whatever organization is designated and recognized as having the role within the state. We are increasingly witnessing the establishment of non-profit corporations formed by a consortium of users and providers of health data in the state to be the CHSS state agency. NCHS provides specifications for achieving uniformity of data conduct and quality and the federal share of the cost of collection through contracts with the CHSS state agency.

In Region VIII, only two states are currently implementing the manpower component, namely Colorado and Utah, and only Colorado is implementing the facilities component. However, do not despair yet. The Division of Nursing, the American Nurse's Association, and NCHS have teamed together to see that the minimum data set for registered nurses shown in the handout will be collected in all states by the end of this calendar year. Through funds provided by the Division of Nursing, the ANA will collect this data in non-CHSS states under a contract with NCHS and together with similar data from CHSS states will produce an unduplicated national inventory and national tabulations. National and state R.N. data should be available sometime in early 1979. Similarly, L.P.N. inventory data will be collected during 1979 and 1980 and be made available in early 1981.

Also, the American Hospital Association and NCHS will be collecting during this year the facilities minimum data set for hospitals, nursing homes, and other in-patient health facilities in states where it is not collected by a CHSS state agency. This is particularly important since it includes the number of R.N.s, L.P.N.s and aides employed full-time and part-time and obtained from each facility, as well as data on bed capacity, in-patient days of care, and services provided, including out-patient services. It will be possible to link the nurse inventory data and the facility data for state and local planning and research purposes either through a model or some other analytical method.

I intend proposing on my return to Washington that priority consideration be given to a state collaborative data use program to conduct in selected states such linkages and analyses for planning decisions. Several issues, such as the locus of the activity in states, access to data, and sources of funding would have to be worked out. I am confident that these decisions can be made, but probably not as soon as we may wish them to be.

I would now like to describe some of the support activities of NCHS as part of the CHSS. Principal among these is the Applied Statistics Training Institute (ASTI). Short-term (usually 5 day) courses in statistical methods and techniques applied to the health field are offered at a number of sites throughout the country. A number of seminars are also sponsored at ASTI to bring together 10-20 experts as a learning process in which thoughts and experiences are exchanged on specific health data issues. A series of national and regional conferences are also conducted by NCHS to develop and communicate concepts and methods in the Cooperative Health Statistics System. Technical assistance is provided to current or potential CHSS organizations to develop their technical and structural capabilities and assist in solving technical and non-technical problems. This assistance is both in terms of direct on-site assistance and in developing guidelines, manuals, and procedures for state and local use. This effort includes the development of a Model State Health Statistics Act, providing for the collection, transmission and protection of health data.

A program of research and demonstration of the use of health data in addressing state and local health issues is also conducted through contracts with state organizations and individual researchers.

As a final note, I wish to call your attention to the NCHS Regional Program consultants. NCHS has a staff person in each of the DHEW Regional Offices to serve as liaison between NCHS and the regional office and among the states in the region. In Region VIII, Mike Liebman has this responsibility. He can be an important resource for you in your future work.

THE NATIONAL HEALTH PLANNING INFORMATION CENTER
NURSING COMPONENT

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The purpose of this paper is to discuss the National Health Planning Information Center (NHPIC), its services and products, and specifically, the Nurse Information Component of the Center. In addition to the Nursing Component, the Center has a component dealing with Long Term Care Planning. We consider both of these components to be in the subject scope of health planning but to provide specialized focus in their respective areas.

The National Health Planning Information Center was established under Public Law 93-641 to: "facilitate the exchange of information concerning health services, health resources, and health planning and resources development practice and methodology...." The background leading to the establishment of the Center was to develop a resource that did not exist prior to the Center becoming operational. That is, there was no common resource that one could go to and identify health planning information as it concerned planning methodologies and approaches, criteria and standards for health services, project review criteria, etc.

The basic background and information sources for the original development of the National Health Planning Information Center were as follows:

- Comprehensive Health Planning Agency which existed under P.L. 89-749.
- Regional Medical Programs. (Incidentially, the group that pulled this information together was from this area--The Public Accountability Group from Boise, Idaho.)
- Hill-Burton Programs and all of the documents related to facilities development at the national and state levels.
- Nationwide health manpower planning survey - As a result health manpower information was one of the more comprehensive subject areas in the initial development of the Center.
- Nurse Planning Information and Long Term Care Planning Information were added to the data base with a focus in each of the subject areas.

The Center was developed with the operational concept that it would not duplicate existing information resources but instead use existing information resources to meet the information needs of the health planning community. As such, it has served as an information center and as a point of referral to more specific information. It is not a free-standing clearinghouse operation. Instead it interfaces with a number of major health resource information organizations and uses their services in carrying out its functions. These resources are:

- The National Technical Service, Department of Commerce
- Division of Computer Research Technology, National Institutes of Health
- Parklawn Health Library and
- National Library of Medicine - (This is a primary source from which the Center received technical advice concerning information processing issues, quality of subject content, and relevance.)

The subject material of the National Health Planning Information Center cuts across all of the functions that a health planning agency or other groups might need in order to carry out a health planning activity. The range of topics included in the Center's collection include: methodologies and approaches in health planning; health planning data and methodologies by which data might be collected - area resources data encompassing both health service, health facilities, and in some instances socio-economic data; criteria for evaluation of care; new or emerging methodologies; evaluation; and health cost analysis.

What are the information sources from which the Center acquires information:

Some of the major sources of information are as follows:

- Agency policy requires that all Federal sponsored contract/grant reports be entered into the system. This includes contracts and grants from Bureau of Health Manpower, National Center for Health Services Research, National Center for Health Statistics, Health Services Administration, Health Care Financing Administration, Social Security Administration, etc.
- Studies and official monographs from health related public agencies such as State Department of Health, State Rehabilitation Agencies and other official bodies at the State level.
- Documents from professional organizations such as American Nurses' Association, National League of Nursing, American Hospital Association, etc.
- State Health Professional Boards or other certifying groups for the health professions.
- Routine screening of books in print, journals including those specifically related to nurse planning information.
- Routine screening of conference proceedings.

The National Health Planning Information Center develops and maintains its own data base. However, the data base is accessible through the National Technical Information Service, and hence, the Lockheed Retrieval System for those who have access to these information systems. The Center is developing plans to assure that the complete data base be made available to the health planning community in a more accessible mode. This will be a means to search NHPIC using terminal access similar to the way you can now search the Medline files of the National Library of Medicine.

How do you request health planning information from the Center?

Users of the Center may request services through the following modes of access:

- Mail requests are received in which the requestor states the specific information needed and the response is made accordingly. The Center will call the requestor in most cases to clarify any questions concerning the information being sought.

- Telephone requests are received on a regular commercial telephone number and on an 800 toll-free telephone number including the continental states and the states of Alaska and Hawaii. Incidentally, for those in the audience who may want to call the Center, the number is 800-638-0818. Requestors may use the Reference Facility of the Center which is in the Parklawn Health Branch Library at 3700 East-West Highway, Hyattsville, Maryland 20782. The collection is available for browsing in either microfiche or paper copy.

- Two Regional Offices provide access to the National Health Planning Information Center data base. For those in the audience who work in this area, that services does exist in the DHEW Regional Office in Denver. Ms. Marge Landis, the Region VIII Office Librarian, can be contacted regarding questions you may have about accessing.

What services are available to users of the Center?

The Center uses a number of announcement mechanisms to inform users concerning its products and services. The most important of these is the weekly abstracts entitled "Health Planning." This publication announces from 75-100 titles per week including a complete abstract of each document's content. In addition to the abstract newsletter, the Center announces new publications through the dissemination of Program Information Letters, special news releases to the news media on new publications, and through the various Agency's "HRA News."

The Center provides bibliographic reference services from its data base and also has access to other data bases such as Medline, ERIC, and Psychological Abstracts.

The response provided to requestors on a typical request include:

- Bibliographic search of the National Health Planning Information data base or search of another data base which is known to have the information, such as Medline;

- A document(s) which may relate to the subject being sought by the requestor;

- A combination of providing bibliographic response and at the same time referring the requestor to a more specific source of information, such as the Clearinghouse on Health Indexes.

The Center maintains a comprehensive contact file which includes a listing of individuals and/or organizations who are known to be involved in specialized health planning related subjects. In addition to the publication of the Weekly Abstracts entitled "Health Planning," the Center publishes four health planning series. They are: the Health Planning Methods and Technology Series, the Health Planning Information Series, the Health Planning Bibliography Series, and the Nurse Planning Information Series. All reports published in these series are available from either the Center, the National Technical Information Service, or from the Government Printing Office. Information materials announced but which have copyright restrictions may be obtained from a university health science library, a public library, or from the publisher in the case of books.

The National Health Planning Information Center produces every document on microfiche which is available for sale from the National Technical Information Service. These documents are also available in paper copy from NTIS. The libraries of microfiche are assigned to various professional organizations, information clearinghouses, or to libraries which have the responsibility to provide access to health planning information. It may be of particular interest to you that this DHEW Region has two libraries of microfiche--one in the Regional Office and one assigned to WICHE. No doubt, you can arrange to borrow microfiche titles from either one of these sources.

The Center develops and publishes bibliographies concerning many health planning topics. To date seven bibliographies have been published and disseminated to health planners and 15 additional bibliographies are in various states of development. An example of topics in development are as follows:

- Epidemiology Techniques in Health Planning
- Planning for Health Maintenance Organizations
- Population Based Health Planning
- National Health Insurance
- Planning for Hospice Facilities and Services
- Cost Containment in Health Planning
- Planning Nutrition Services

Finally, there are several services that we provide in coordination with other bureaus or agencies. First, we work with the National Center for Health Statistics in the development and publication of statistical notes directed specifically to the health planner's needs. Examples of these are as follows: "Cause-of-Death Data," "Mental Health Demographic Profile for Health Services Planning," "Standardized Mortality Ratio and Lost Index by Years of Life, State and Health Service Area 1969-71," etc. Again we work with NCHS in the maintenance of a list of Selected Data Sets for Health Planners. These, along with updates, are sent to health planners throughout the country. The Center is the prime point of access to the Area Resource File developed by the Bureau of Health Manpower. This is a computerized data system that includes data elements useful in the analysis of health manpower, health facilities and health services in a geographic area. The data are broken down to various levels including State, SMSA, HSA, and county. This file includes approximately 35 data elements.

In conclusion, I want to encourage all of you to send your planning studies, issue analysis, health planning data, and other informational materials to the Center--National Health Planning Information Center, Center Building, Room 5-22, 3700 East West Highway, Hyattsville, Maryland 20782. It is through this effort that you can share your experiences and accomplishments with health planners throughout the Nation.

SECTION V

POLICY IMPLICATIONS

Information derived from nursing manpower assessments and projections should be used to influence policy decisions. An adequate information base is the first component of the decision making process. Alternative approaches or multiple impact strategies can then be specified, and the decision can be implemented and subsequently evaluated. Manpower data can be used by the nursing profession and planning agencies to initiate and influence policies. In other situations however, the information is mandated by the policy makers. Accurate and complete projections are essential at all decision making levels, from specific educational and service institutions to the regional, state and federal levels.

Levine's paper describes how Congress has required state-by-state projections of nursing manpower supply and requirements that will be used in policy decisions concerning the renewal of the current Nurse Training Act. He focuses on the formation and work of the National Panel of Experts on Nursing; the Panel's report was included in the 1978 Report to Congress.

Secondly in this section, state level policy implications are summarized. During the conference, participants from Region VIII met in respective state caucuses. This allowed the professionals and planners to meet together to discuss the status of nurse manpower planning efforts in their states. They discussed the facilitation and implementation of planning and suggested what the policy implications have been or might be as a result of their state level planning. The conference speakers also reported experience at the state level. The final portion of this section then, reports the experiences of the Region VIII states and the illustrations shared by the conference speakers.

REPORT OF THE NATIONAL PANEL OF EXPERT CONSULTANTS ON NURSING

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The report of the National Panel of Expert Consultants will be released in June, 1978. It will contain the findings of a group of experts on nursing concerning the five year projected requirements for registered nurses, licensed practical nurses, and nurses' aides. The work of the panel was undertaken in response to Section 951 of the Nurse Training Act of 1975 (P.L. 94-63). This section of the Act calls for a detailed set of data on the supply, requirements and distribution of all types of nursing personnel. It is necessary for Congress to have these data to determine future policy concerning continuation of federal support for nursing education. The current Nurse Training Act expires in September, 1978.

In previous versions of the Nurse Training act, beginning with the Nurse Training Act of 1964, Congress did not specify the data it wanted for its policy deliberations. All that was asked for was an overall evaluation of the impact of the legislation in meeting national needs for nursing services. The last major analysis of current and future nursing requirements was made by the Surgeon General's Consultant Group on Nursing, and its report was contained in Toward Quality in Nursing (11). The work of this consultant group was very influential in the adoption of a Nurse Training Act of 1964.

Data for Congress on the Nurse Training Act of 1975 are required to be presented in Annual Reports from the Department of Health, Education and Welfare beginning with the year 1977. The 1977 Report, due in Congress on February 1, 1977, was actually submitted in February, 1978. The report for 1978, which was due on February 1, 1978, is currently making its way through the Department.

It is the 1978 Report that will contain extensive data on future nursing requirements, as well as on projected nursing supply. These data will come from three sources: (1) the National Model, developed by Pugh-Roberts, using a system dynamics model; (2) a model for determining the impact on nursing requirements of national health insurance, expanded nursing roles, and changes in the organization and delivery of health care (i.e., health maintenance organizations) developed by Vector Research, Inc., using regression techniques; and (3) the projections of the National Panel of Expert Consultants, using the State Planning Model approach developed by the Western Interstate Commission on Higher Education (WICHE).

The origins of the work of the Panel of Expert Consultants were in the project, Analysis and Planning for the Improved Distribution of Nursing Services and Education, (47) conducted by WICHE under contract to the U.S. Public Health Service's Division of Nursing. This project's major purpose was to develop ways to analyze and improve nursing distribution so that services could be provided more equitably and effectively. This project was initiated on March 15, 1975, several months prior to the passage of the Nurse Training Act of 1975. It was obvious at the time however, that this Nurse Training Act would contain detailed data requests on projected supply and requirements, so portions of this contract were directed toward helping meet these requests (i.e., the National Model and the State Planning Model). The latter model was developed as a tool for state and local planning agencies to use in determining their own nursing supply and requirements. The major user was seen to be the Health Systems Agencies, created by the National Health Planning and Resources Development Act of 1974, adopted shortly before the Analysis and Planning Project began.

The Analysis and Planning Project was supported for 18 months. At its conclusion in September, 1976, the State Model had been developed, but it had not received extensive field testing. The decision was made at that time to extend the contract for an additional twelve months to bring together a Panel of Expert Consultants who would apply the State Model to generate state-by-state data on nursing requirements in all the detail necessary for the 1978 Report to Congress. This was the only approach that seemed feasible for obtaining the data. Other modeling efforts supplied only part of the data (e.g., the National Model gave national estimates only, while the Nurse Training Act of 1975 calls for state-by-state data). Individual state applications of the State Model, while a useful approach for getting state data, would have taken several years to achieve, and the data would not have been available in time of the 1978 Report.

A complete description of the State Model methodology is given in another paper by Elliott and Athey. While the Panel of Expert Consultants utilized the essential elements of this model, it make a number of adaptations, primarily because it needed to make estimates for all states and from a national perspective. If an individual state were to use the State Planning Model, its perspective might well be different from the National Panel of Experts, although gross differences are not anticipated.

The National Panel of Experts composed of 21 members, 15 of them nurses, only concerned itself with the projections of nursing requirements for the year 1982. Supply projections were developed by Division of Nursing staff on a state-by-state basis for 1982, and these data were used in conjunction with the Panel of Expert's requirements projections. While the Panel of Experts did not determine its own supply projections, it did examine such data to assess the feasibility of the requirements projections.

The work of the Panel of Experts took place in five 3-day meetings, the first in January, 1977, and the last in July of that year. As is described in the report on the State Model, the deliberations of the Panel of Experts were structured in the following five areas that lead to the determination of state-by-state estimates of nursing requirements:

- Population
- Health Needs
- Health Goals
- Health Services
- Staffing Patterns

In the taxonomy of modeling techniques that was described by Glasser in another paper, the work of the Panel of Experts can be called a professional judgment approach. The Consultants' main role was to supply (in the five areas listed above) assumptions to generate the state-by-state requirements projections.

An important backdrop to the Panel's deliberations are the five major goals in the Forward Plan for Health (12) of the Federal Government. These are:

- Removing the financial barriers to health care
- Providing equal access to care
- Containing the costs of care
- Improving the quality of care
- Promoting preventive care

The projections of nursing requirements for 1982 were directed toward these goals. Thus for example, the Panel saw an increased requirement for nurses in ambulatory care as a means to expand access to care. Cost containment, which the Panel viewed as cost effectiveness (a more positive approach to the attainment of adequate health care) permeated all of the Panel's projections, and it was the firm belief of the Panel that their projections were consonant with this goal. Prevention, including health maintenance and health promotion, was a fundamental thrust of the projections; the Panel felt that registered nurses have a major role in this area.

The intent of Congress in asking for data on nursing supply and requirements is to answer the question, "Is there a nursing shortage, or is there a surplus?" Realizing that an overall national assessment of this question, as was done by the Surgeon General's Consultant Group, might mask the well known fact that some areas of the Nation are better supplied with nurses than are others, Congress asked for a state-by-state assessment to reveal states that were over supplied and those that were under supplied. Such an assessment from the national perspective has not been attempted by the Federal Government before. In 1956, the NLN made a crude state-by-state assessment. It used as its criteria the upper quartile number of the R.N. to population ratio when the states were arrayed in the order of magnitude of their ratio of nurses to 100,000 population. This upper quartile number in 1956 was 350 registered nurses per 100,000 population, while today this upper quartile number is over 500.

At the same time that the NLN made its state-by-state analysis of nursing requirements, there existed a widespread feeling that the United States had a severe and persistent nursing shortage. The feeling first became evident at the end of World War II when the Nurse Training Act of 1943 (a war time endeavor) was phased out, resulting in a sharp drop in enrollments in schools of nursing preparing R.N.s. In addition, registered nurses in large numbers were leaving the work force to marry, become housewives and raise children.

Acute shortages measured by vacant nursing positions in hospitals and community health agencies continued through the early 1960's, giving impetus to the Nurse Training Act of 1964. By the end of the 1960's and in the early

1970's for the first time, questions were beginning to be raised about the continuance of the shortage. Thus in recent years, a controversy has raged over whether there is a nursing shortage or not. Evidence presented on both sides of this argument have not come from modeling or other systematic assessments of the nursing manpower situation. Instead, the evidence is a collection of selected statistical indicators, conventional wisdom, feelings and intelligent guesses. Those who believe that the shortage is over, present the following arguments and evidence: (1) the large growth in the supply of registered nurses, practical nurses and nursing aides; (2) the large growth in the number of nursing students; (3) the rise in labor force participation among registered nurses; (4) the reductions in nursing staff; (5) the replacement of practical nurses by registered nurses; (6) the results of time studies using industrial engineering techniques that show "over staffing" in nursing departments; (7) results of selected state studies of nursing resources and requirements which showed surpluses; (8) the moratorium in some states on opening of new schools for registered nurses; (9) unemployment among recent graduates of A.D. programs in some areas of the country; and (10) the job stability among registered nurses (i.e., lower turnover, lower drop out from the labor force).

Those who claim the shortage of registered nurses still continues present the following evidence: (1) the uneven geographical distribution of registered nurses; (2) the unemployment rate among registered nurses is less than one-half the rate for all other occupations; (3) follow-up studies of alumni do not indicate difficulties for R.N.s to get jobs; (4) advertisements for job openings for R.N.s appear regularly in newspapers and magazines; (5) foreign nurses tend to be imported to fill vacant positions in U.S. hospitals; (6) large numbers of R.N.s continue to work part-time; (7) some state studies of nursing resources and requirements report shortages of R.N.s; and (8) the educational preparation of R.N.s continues to be well below what has been recommended by experts on nursing.

With these issues as a backdrop, the Panel of Expert Consultants estimated the state-by-state requirements for registered nurses for the year 1982, using the State Model as a planning guide. Its findings will be fully explained in its soon-to-be-issued report. (46) Its major conclusions can be summarized by saying that in gross quantitative terms, there is a rough balance between R.N. supply and requirements in the United States as a whole. Quite a number of states continue to have severe quantitative shortages. When the qualitative side is examined in terms of educational preparation of R.N.s, the United States as a whole, and practically every state has severe and persistent shortages. The magnitude of this shortage is illustrated in Table 1.

TABLE 1. Actual and Recommended Distribution of RNs by Educational Preparation

Highest Level of Preparation	1950 Actual %	1963 % Recommended[1]	1978 Actual %	1982 % Recommended[2]
Diploma and Associate Degree	91.8	50	77.0	36
Baccalaureate Degree	7.2	40	18.6	48
Masters and Doctorate Degrees	1.0	10	4.4	16

[1] Recommendation of Surgeon General's Consultant Group on Nursing

[2] Lower Bound Projections of Panel of Experts using State Model developed by WICHE

It is in this latter area of higher educational preparation that the shape of future federal legislation in nursing will probably be directed.

THE STATE PLANNING EFFORTS*

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Report of the State Caucuses

All Region VIII states recognized that nursing manpower studies were not only required by law, but that they could serve as an information base from which to make many important decisions. Utah, for example, stressed the need to have this data for justifying appropriations of state funds for health care resources. Caucus representatives from Montana, Colorado, North Dakota and South Dakota all mentioned the major implications for the kind, quality, creation and control of nursing educational programs.

There were many similarities in the reports of the states relative to philosophy, commitment and specific problems. All of these states are primarily rural, and they acknowledged the unequal distribution of both the population and nurses across their states. Reports indicated that each state was interested in more systematic, accurate and current data about manpower needs and supply. Most states have some data about their current nurse manpower situation. This information is generally limited to supply data that has been compiled by the State Board of Nursing or a professional nursing association. Derived from national reports, all states know their nurse to population ratios and how this ratio compares to all other states. While current data provides information for certain policy decisions, five or ten year projections were seen to be even more essential and a great outstanding need for every state.

The major difference among the states was the stages of current planning efforts. Some states are now in the process of planning for planning while other states have completed a plan and have implemented decisions based on the plan.

South Dakota was clearly further than other states in the planning process. Assisted by the Linkage Project awarded in 1974, South Dakota has prepared a formal plan, and this report has been distributed to agencies and groups across the state. Thus, South Dakota has experienced the influence of the plan on policy decisions. Schneider reported that the higher education body in that state utilized the plan in their deliberations about funding a proposed baccalaureate program in the western part of the state. (Currently all three baccalaureate programs are in the far eastern part of the state.) Consonant with the nursing manpower plan, this new program was not approved. However, funding for an upward mobility program in western South Dakota was funded. This program will influence the educational mix of nurses rather than increase the number of nurses; A.D. and diploma graduates will have an opportunity to earn a bachelor's degree in nursing. Approval and funding followed the recommendations of the plan.

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*This summary was prepared by drawing principally from the discussions held during the state caucuses and the speakers comments during the conference.

Another part of the nursing plan in South Dakota was the recommendation for either an instate Master's program or an external graduate program in cooperation with a surrounding state. The Regents have attempted to work out external arrangements without success to date. It was noted that unfortunately, funding for this effort was cut from the budget by the governor. It is anticipated that South Dakota State University will develop, in the near future, a proposal for a Master's degree in nursing.

The Colorado caucus representatives reported that a manpower study for the state was recently completed. The State Model was used by WICHE, who under contract with the Colorado Commission for Higher Education (CCHE) developed the plan. The legislature appropriated the money for the study. CCHE had declared a moratorium on approval of nursing programs until such a plan was completed (i.e., the proposal for a Ph.D. program in Nursing at the University of Colorado Medical Center has been delayed). The manpower report is expected to be released within the very near future.

Elliott clarified that the Colorado plan had been completed with a panel of consultants that included representation from the Colorado Nurses Association, Colorado State Board of Nursing, Colorado Hospital Association, State Health Department, nursing service, nursing education (higher degree, vocational and junior college), medicine, health economics and each of the three HSAs. Elliott presented the nature of the contractual arrangement with CCHE and reported that authorization for releasing this information would be forthcoming from CCHE. She further reported on the progress reports that were made to organized nursing groups to inform them about the study. In sum, Colorado has completed manpower projections based on the State Model, and the process involved both HSA planners as well as professionals.

Conference participants from Montana reported that one meeting had been held on March 20, 1978 by the Montana HSA (MHSA) to begin planning for nurse manpower assessments. Previous activities were contained in a nursing manpower task force of the Montana Nurses Association which is now participating in MHSA. A representative from the Commission on Higher Education participated and will continue. The Montana L.P.N. Association and Montana Hospital Association will participate in future meetings.

Impetus for manpower projections in Montana was augmented by the need to control the number of educational programs, to control the stability of existing programs, to develop better educational programs and to have supporting data to present to the legislature. In contrast to other states, Montana's legislature has encouraged increased numbers of students in their state-supported baccalaureate program. Educators have felt the need to control the program size in order to maintain the quality of the program. Projections about supply and requirements will be informative for decisions by both legislators and educators.

Following the initial meeting in March, 1978, a survey was conducted that requested schools of nursing at all levels to determine the number of graduates and job placement in recent years. As the Montana participants discussed the various methodologies presented at the conference, they noted that many of the methods require the use of computers and access to computer capabilities may be a problem.

North Dakota reported that they have not formally begun the planning to develop a nurse manpower plan. The representatives shared data about their current nursing manpower. They reported their nurse to population ratio (448/100,000) to be 9 percent higher than the national average. The physician to population ratio is two-thirds the national average. They reported a distribution problem and a lack of nurses prepared at the higher educational levels. Cited were 1 percent Master's preparation in service and 16 percent Master's preparation in nursing education. Similarly, community health positions were not well staffed due to a lack of qualified nurses.

Data on the current situation in nursing have been used to impact policy at state and institutional levels. North Dakota reported that state funds had been secured for arranging graduate level courses to be brought to a centralized location in North Dakota by a neighboring state's university. It was noted that the paucity of Master's prepared nurses in the state may be an impetus to develop a Master's program within the state.

The North Dakota caucus recommended that a task force for nursing manpower planning be created. Identified membership would include N.D. State Nurses Association, N.D. Licensed Practical Nurse Association, the State Board of Nursing, the Board of Higher Education, the State Health Department, the Hospital Association, the Medical Association, Indian Health, the three HSAs, and consumers. They suggested ex-officio representation from South Dakota.

In order to implement a plan for planning in North Dakota, several nursing and nursing education organizations will meet in August, 1978, to initiate plans within nursing. Subsequent to this meeting, they suggested assembling a small group of planners and professionals to discuss feasibility issues. If positive in outcome, a formal linkage group as described above, would be created.

The choice of models to use in North Dakota would be determined by the planning group. Consultants would be secured for planning methodologies. This group emphasized that the plan would include action goals for impacting future policy decisions.

The Utah caucus reported that the following agencies are initiating the first phases in Comprehensive Manpower Planning: the Utah HSA, the Utah State Higher Board of Regents, the Special Legislative Committee appointed by Governor Matheson, the Utah Nurses Association, the Utah Division of Health, and the Utah State Department of Social Services. They reported that no formal linkage currently existed, but the various agencies are attempting to coordinate their efforts to avoid duplication and to encourage cooperative relationships.

To date, Utah has used a fixed population ratio model and a hospital survey of nursing needs based on unfilled budgeted positions and turnover rates. They acknowledged that this is a short range current assessment. Since Utah is just beginning its manpower planning, Utah representatives reported that specific methodology for long range planning would be premature at this time. The Utah Nurses Association has been awaiting the results of the WICHE Analysis and Planning Project to guide its planning efforts.

The Wyoming caucus reported that it has not developed a manpower plan or a plan for planning. They reported that the determination of a methodology must be deferred until data issues are resolved. The minimum data set is currently under discussion. A task force was suggested that would include the four categories of planners, educators, consumers, and providers. The provider representatives might be from the nursing, medical, dental and public health associations, as well as from the hospital administrators and long term care groups. Strategies for comprehensive manpower plans for Utah would need to be projected, and funding sources would need to be developed.

In addition to the states reporting their current stages in the planning process, another difference noted among the six states in Region VIII was the availability of data. All states have some data from the licensing agency. Only two states in Region VIII (Colorado and Utah) have a contract with the Cooperative Health Statistics System (CHSS). Twenty-five states across the nation have such contracts which facilitates a uniform minimum data set on manpower. There is a second component of CHSS, Health Facilities, that examines hospitals, nursing homes, and other inpatient facilities. Again 25 states participate, but Losee reported that Colorado is the only Region VIII state involved. South Dakota reported that resolving the incomplete data problem would be a major effort in preparation for revising and updating the Linkage Report.

States reported various other sources of data (i.e., school of nursing alumni surveys). Participants expressed anticipation of the report of public health nurses that will be available next year; it was last completed in 1974. Levine informed participants that the ANA Inventory would be available at the end of 1978, six years after the preceding report. The issue of whether data should be available before selecting a methodology for planning was debated. The importance of planning activities being carried out, in spite of data limitations, was recognized.

Report of the Panel Discussion and Speaker Comments

The conference speakers also shared information about their own states. Dars, for example, reported that the first Health Education Master Plan (1974) in New Jersey has served as a guide for ending the unsystematic approach to approval processes of new programs. He reported that in New Jersey, shortages do not exist and there is no current emphasis on planning for increased educational preparation of nursing manpower. He reported that the Office of Manpower was not supportive of the 1985 Resolution, a document suggesting that the B.S. become the minimum credential. Therefore, no recommendations have been made for phasing out diploma programs. The plan suggests that sufficient nurses are prepared, and it has influenced policy with the effect that new programs and expanded programs are not approved in New Jersey.

Lindeman shared the manpower planning efforts and subsequent policy changes in Oregon. Using the Research Training Institute model, an Oregon group primarily examined supply. The state plan was completed at a cost of approximately $2,000 including computer time, technical assistance and programming. Some requirements were estimated. The report was sent to the Board of Higher Education.

At the University of Oregon, Lindeman reported that enrollment will be reduced from 200 to 100 generic students in attempt to bring manpower under control. Consistent with the manpower report, the University is increasing the size of and number of specialities in the Masters program. Not all schools, however, have cooperated with the manpower report. Lindeman reported that although all educational directors of A.D. programs agreed to limit the size of their programs, at home the pressures of community college presidents seemed to change the earlier commitment. She also reported that although the plan was applauded, two new programs have been approved and the satellite program suggested by the study, failed to receive the governor's support.

Discussion

It is interesting to note that most of the policy implications reported by the state caucuses and the speakers have been directed toward nursing education. While influencing the supply is most easily accomplished by regulating the number of new R.N.s produced or offering opportunity for career ladder education to improve the educational preparation of current R.N.s, perhaps policy implications might look broader than only considering the kind, size and number of programs. For example, the distribution problem was identified by nearly all of the Region VIII states. When manpower supply and requirements are known, policy will be directed more appropriately toward actions which should result in a shifting of distribution.

SECTION VI

SUMMARY AND CONCLUSIONS

According to this conference's participants, nurse manpower planning exists to initiate and influence policies relevant to nursing and health care. Nursing manpower planning specifically derives its raison d'etre from the need to initiate and influence policies which will affect numbers, geographic distribution and educational preparation of nurses through a multilevel approach aimed simultaneously at an interacting and integrated system including federal, regional, state, HSA, and institutional levels. Four major questions then stem from this premise:

- What kinds of policies are most likely to be focal?
- How shall effective nursing manpower planning be accomplished?
- What nursing manpower planning models will be most useful in initiating and influencing these policies?
- Who needs to be involved in nurse manpower planning to insure that implemented policies indeed result from the planning efforts?

The sum and substance of the conference presentations and discussion as well as the subsequent summary presented here will address these four major questions.

The Kinds of Policies

Levine predicted that the federal focus will be on educational preparation and geographic distribution, not on numbers. The quantitative issue, which initiated federal involvement in the funding of nurse manpower programs and which occupied its attention for the last ten years, will no longer command the attention it has in the past. Rather, the focus will shift to addressing the inequities in geographic distribution and questions and issues related to the educational preparation of nurses. Undoubtedly, such a shift will not only have broad implications for the funding of nursing education, but for reimbursement policies, cost containment efforts, and regulatory policies, all of which will significantly influence the nursing service arena. The same sense of issues and policy focus was emphasized by the state level caucuses and discussions.

In this context, Craig's comments concerning the importance of quality assurance activities in manpower planning becomes pertinent. She emphasized that the input in terms of the types of nurses will significantly influence the outcomes in terms of the care. It thus becomes increasingly important to link patient care outcomes to the level of education. Nursing must become more concerned than ever with the results of care and how they relate to the different levels of educational preparation for nurses. As Craig argued, these policy foci will also require attention to a broadened view--a view that puts an emphasis on health status, health needs, and self care rather than the current limited focus of illness care and the medical care system.

Craig and others called for a clarification of the nursing role that avoids the stereotyping and definition of nursing roles defined by other than nurses.

The Parameters of Effective Nursing Manpower Planning

Given these important and changing policy foci for nurse manpower planning, it is necessary to identify strategies that will be most effective in terms of influencing these policies. Glasser provided a useful framework for considering these decisions. Specifically, when addressing the question of how to select a model, he outlined three major items that should be considered:

1. The purposes for the planning
2. The planning and model procedures
3. The people to be involved in the planning

With the previous policy implications in mind, it becomes imperative to look carefully at manpower planning models in terms of their purposes. Will they be able to influence policies on the educational preparation and the geographic distribution of nursing manpower? It is also important to consider the procedures, how elaborate they may be, how costly they may be, and how feasible they may be given the exigencies and implications for policy decisions. Finally, if effective policies are to be initiated and implemented, the people to be involved in the process and the manner in which they are linked become important. Now let us turn our attention to each of these areas and see what conclusions emerged from this conference.

Nursing Manpower Planning Models

An obvious point, but one which deserves repeated emphasis, is that manpower planning should proceed beyond current bounded approaches and seek future oriented designs. Current bounded approaches focus largely on what is needed now, concern themselves with current gaps and discrepancies, and fall into the trap of preparing for yesterday at worst or today at best. Speaker after speaker emphasized the importance of looking at future oriented models of nurse manpower planning in terms of their purposes and approaches. In this context, Glasser provided an important distinction between those future oriented approaches which he called projective and those which he called forecasting. While the projective models may be future oriented in that they look beyond the current gaps and discrepancies, they have the fault of planning with status quo assumptions. In other words, they assume that current ratios of nurses-to-population are sufficient to explain nursing manpower needs in the future. He argues that truly future oriented planning involves forecasting, that is, planning with futuristic assumptions that take into account the possibility of different ways of using nurses to provide the needed services to a population.

Once this important distinction about timeframes has been made and assumptions about the stability of the health care system have been classified, Glasser and Dars pointed out at least four different models that may be used to approach nurse manpower planning:

1. Demographic models
2. Regression models
3. Probability models
4. Professional standards models

The demographic models focus largely on population characteristics and nursing supply characteristics. They are exemplified by fixed ratio approaches derived simply from nurse-to-population ratios. Another example of this approach is what Dars called the economic approaches which look at supply and demand characteristics, (i.e., population characteristics and nursing supply). These approaches fit what Glasser called the projective approach and proceed from status quo assumptions.

The regression approaches are exemplified by Dars' econometric approach and his optimizing model. Both of these approaches attempt to identify a number of characteristics and variables which influence demand, supply and distribution. They do not rely on status quo assumptions. They do make an attempt to forecast by using a number of assumptions about various other factors in the future. Conference participants argued however, that one of the flaws in these approaches is that they tend to disregard the differences in nursing roles related to educational preparation.

The probability models make an attempt to consider various possible future alternatives in the uses of the different varieties of nurses. By assigning different probabilities, different likelihoods for certain events happening, they try to develop different scenarios which may be used as a basis for planning. One example of this approach is a simulation model called POPSIM.

The professional standards approach puts the entire scheme in the hands of professionals. This approach begins with some assessment of health care needs of the future. Using these needs, professionals then make estimates of the amount of services needed and how many of what kinds of nursing manpower will be required to meet those service needs.

Given the policy implications, that is, for what reason and what level the manpower planning is being done, the unit of analysis assumes great importance. In terms of selecting an appropriate unit of analysis for nurse manpower planning, planners will be confronted with a tension between two critical aspects. On the one hand, as Craig pointed out, there is the need to get the manpower planning down to the level of political feasibility, responsiveness, and jurisdiction. In other words, if the manpower planning is to be effective, it must be at the level at which legal control can be directly exerted. On the other hand, this necessity conflicts with nurse migration patterns. The professional behavior of nurses, their independent and family wishes, as well as the varied sources of their production all transcend these political boundaries. This issue related to the unit of analysis was repeated again and again in the conference. And the concerns were with whether policies and thus planning models should be directed at influencing federal policy, hence requiring a national model, or state policy, hence requiring a state model, or focused on the institutional level. There was no clear answer to what was the appropriate unit of analysis but the message was that the unit of analysis should be carefully addressed given the purposes and the policy implications.

Glasser's second major category was concerned with selecting a model, given its procedures; specifically here, he was addressing two points. First were the assumptions implicit in and required by the model. Concern has to be directed toward whether the assumptions of the model fit the setting and fit the purpose. Second were the data questions. Specifically, the concern here was that the data requirements of the model could in fact be met by the unit or agency involved in doing the planning.

Glasser pointed out that there are several data sources such as licensing data, employment surveys, career studies and research studies. Among the problems which may exist with these data needed for nurse manpower planning, however, are: gaps and omissions, the lack of standardized categories and definitions, timeliness and currency, access, and coordination. Both Losee and Meadows talks responded to these data problems and concerns, with Losee describing their efforts in developing the Cooperative Health Statistics System (CHSS) and Meadows detailing the offerings of the National Health Planning Information Center (NHPIC). The thrust of CHSS is the sharing of data and frameworks and data toward the ultimate goal of having uniform minimum data sets for health planners. A significant step in this direction has been the development of "a model State Health Statistics Act" to serve state legislatures in developing laws which will facilitate the collection, sharing and confidentiality of health statistics. One important outcome of such an information lease could be the linking of nurse inventory data and facility data for manpower planning purposes. NHPIC, on the other hand, emphasizes the exchange of information related to health planning methodologies, although through cooperation with the National Center for Health Statistics, they are also able to facilitate the exchange of health planning cata. Each of these efforts should, thus, begin to improve the access, uniformity and coordination of data required by the models for nurse manpower planning.

Who Needs to be Involved?

Since a perennial problem in nursing manpower planning is the varied educational preparation of nurses, since economic theory tends to ignore several important attributes of the nursing field, and since the health field needs a broadened focus--namely health care--nurses need to be involved in meaningful ways in nurse manpower planning. Specifically, Craig argued that nurses need to take a leadership role in defining the roles of nurses and in broadening the articulation of the nursing role. This process simply cannot be left to others who tend to see "a nurse as a nurse as a nurse." In order to counteract this stance and to avoid the stereotyping of nurses, Craig contended that nurses should take a proactive stance in planning; they simply cannot be in the position of reacting to plans which are developed by other groups. They should be involved from the beginning and should begin by developing a philosophy which includes an elaboration of the viewpoint of health care and appropriate nursing roles with regard to it.

Nursing manpower planning, however, cannot be done in isolation; one group cannot be planned for without looking at the interrelationships with other groups. Hence, it becomes imperative to link the involvement of nurses with others. The others to be involved should include not only planners in the HSAs and SHPDAs, but physicians, and those who will be involved in initiating and influencing nursing manpower policies. The key components for the appropriate involvement of nurses and linkages with others are *clarity*, *commitment* and *continuity*.

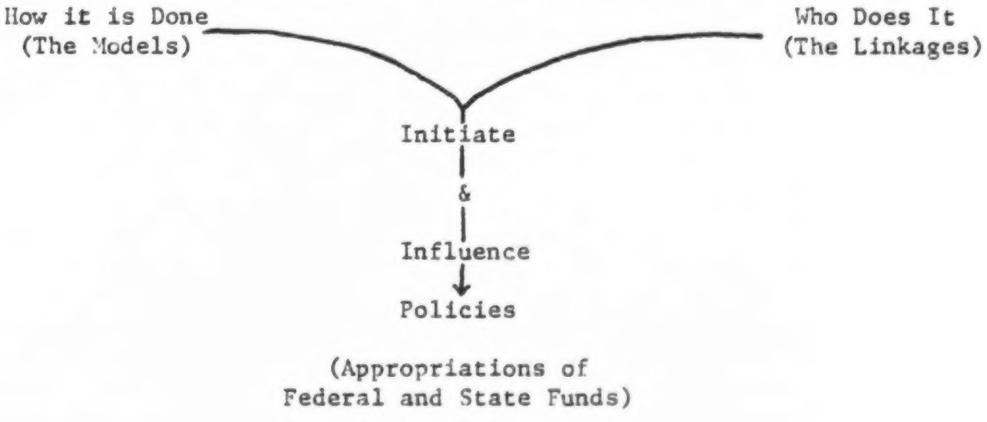
The clarity of roles for the nurses, as well as the others involved in planning, requires attention to the perspective, to the philosophy, and to knowledge and expertise. The focus should be on the planning assumptions and purposes and who can most contribute to defining these.

The commitment of nurses to the planning process can be fostered by their effective integration into the process and by the clarification of their roles in the planning. Nurses who may make good representatives of nursing groups, and in particular of the practicing nurses, need to be involved in this process, but they should be involved in such a way that communications link the planning participants to the groups whom they represent.

Finally, commitment of the involved nurses to the planning process will be fostered by their having the opportunity to see the process through to its conclusion--that is, through to the implementation of policies that indeed do make a difference. The meaningful involvement of nurses requires that they be involved over time. The role is not just to be present for the production of a plan, but in fact to see it through to the successful development of policies which are then implemented.

The messages of this conference, while presented in many ways and in some complex discussions of some sophisticated models, can be reduced to two simple messages. First, nursing manpower planning is important because it is a way to influence federal, state and other policies which will most directly relate to affecting numbers of nurses, their educational preparation and their geographic distribution--issues which should be of concern to all nurses. Second, effective nurse manpower planning can only be achieved by the appropriate clarification of roles and linkage of nurses with all of those involved in the planning and policy setting process. These simple messages are diagrammed in Figure 1.

Figure 1. Nursing Manpower Planning and Its Rationale



A GLOSSARY OF TERMS FOR HEALTH PLANNING*

LAWS AND PROGRAMS

Hill-Burton: The first federal health planning effort, the Hospital Survey and Construction Act of 1946 (42 U.S.C. & 291 et. seq.), set up a network of State ("A") and Local ("B") agencies to assess the need for health facilities. The agencies were responsible for developing plans to construct those facilities and for funding the construction. To the good, the Hill-Burton program built hospitals in long underserved areas. To the bad, the Hill-Burton program fixated on acute care beds with a disinterest in the integrated medical system which offers out-patient care where appropriate.

CHP: The Comprehensive Health Planning and Public Health Services Amendments of 1966 (codified at 42 U.S.C. 246 et. seq.) grafted onto the already extant voluntary health planning structure. The CHP agencies were to monitor the construction of health facilities and furnish an arena for providers, government, and consumers to discuss health planning. A last minute insertion in the law which prohibited CHPs from interfering with existing patterns of private practice of medicine[2] assured that the teeth of the legislation were blunted.

RMP: The Heart Disease, Cancer, and Stroke Amendments of 1965 (P.L. 89-239; codified at 42 U.S. 299 et. seq.) authorized the creation of Regional Medical Programs to coordinate medical research and disseminate the results of research throughout the health care system. DHEW designated regional agencies which received federal funds to accomplish these functions. Subsequently these designated RMP's received more funds and expanded their jurisdiction to include data exchange and construction projects among other things. The RMP's got into the health planning process to the tune of $1 billion.

Section 1122: Section 1122 of the Social Security Act (42 U.S.C. 1122, 42 C.F.R. 100.101 et. seq.) became effective in December 1972. Under section 1122 DHEW pays the administrative costs to submit proposals for additional construction to a review process. In order to be approved, they must fulfill a "public need." Conditioned on the successful passage through the review process are reimbursement of Medicaid, Medicare, and Title V.

Certificate of Need: Certificate of Need (C/N) laws vary in each of the 26 states which have enacted legislation with respect to structure and authority. The main thrust is to insist that "public need" be demonstrated before expansion of health facilities or services can take place.

PL 93-641: The National Health Planning and Resources Development Act (codified 42 U.S.C. et. seq.) was enacted on January 4, 1975. It represents the third legislative try to make sense out of health planning. New health planning agencies replace CHPs, Hill-Burton, and RMPs. These health planning agencies will have bigger staffs and therefore have the opportunity to depend less on industry. P.L. 93-641 mandates Certificate of Need legislation in every state, in addition to continuing to fund Section 1122. The authority of the planning agencies extends to ambulatory as well as acute care. Most important, the consumer is written into PL 93-641. Consumer majorities are required at the local level and can dominate 60 percent of the areawide board membership. However, in order to be effective, consumers must become knowledgeable about the law and the health needs of their areas.

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*Adapted from Consumer Health Action Network I (January 1976): pp. 4-6, Published by Health Research Group, Washington, D.C.

PL 93-641 contains many new terms. Here are a few useful ones.

HSA: Health System Agency - This is the local areawide planning body which is either a nonprofit or governmentally sponsored entity designated under PL 93-641. The role of the HSA include (a) gathering and analyzing data from objective sources such as statistics generated from the health care delivery system and from subjective data, such as people's opinions based on their health needs and experiences; (b) formulating health plans and criteria for judging "need" based on community wants; (c) educating the community about the long-range implications of their local health plan; (d) slowing the increase of health care costs by scrutinizing new investment to see whether it fits into the local plan.

SHPDAs: State Health Planning and Development Agencies are the state-level equivalents of HSAs. The SHPDAs are supposed to assemble the health plans of HSAs within the state to formulate an integrated state plan. They also act as the planning agencies in states which participate in Section 1122, administer Certificate of Need programs and have responsibility for state health policy analysis, state health facilities planning and data gathering and analysis.

SHCC: State Health Coordinating Councils consist of at least 16 members, appointed by the governor, of whom 60 percent represent HSAs. At least 1/2 must be consumers. The Councils prepare State Health Plans, review budgets for HSAs and advise the state agencies.

HSP: Health Services Plan is a blueprint for community health needs made up by HSAs.

AIP: Annual Implementation Plans -- the nuts and bolts as to what will happen in an area during a one-year period.

PSRO: Professional Standards Review Organization, a federal program still in its early stages. PSROs are supposed to monitor the quality of medical care by audits of individual practitioners and services. PSROs are supposed to make some of their data available to HSAs.

GENERAL TERMS

Rate Review: Rate Review translates into how much money hospitals and other providers of health care receive from insurance companies, federal and state programs, such as Medicaid, and individuals. In this system institutions project financial needs in advance and set charges (rates) accordingly. An agency reviews these rates, and the institutions must operate within the budget or go into the red.

Capital Expenditures & Services Control (CES): The CES Controls means examining the supply of facilities and services with the intention of balancing off need against the expense of expansion and modernization. The goal of CES controls is to discourage the creation of facilities over and above community needs. Certificate of Need is an example of direct control whereas Section 1122 is an example of indirect control.

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[1] Barry Ensminger, The $8 Billion Hospital Bed Overrun, (Health Research Group, 1975), 47ff.

[2] Ibid., 50ff.

ANNOTATED BIBLIOGRAPHY

The following publications and reports will be distributed by the Western Interstate Commission for Higher Education and the Division of Nursing, DHEW, and most will be available through the National Technical Information System (NTIS).[1]

Bergan, Tom, and Hirsch, Gary. *Analysis and Planning for Improved Distribution of Nursing Personnel and Services: A National Model of Supply, Demand, and Distribution, Final Report*. Boulder, Colo.: Western Interstate Commission for Higher Education, 1977.

An extended description of and documentation for the National Nursing Model, including quantification of variables. Of interest to those who wish a detailed account of the model's development, components, and useability. Anticipated distribution, November 1978.

________ . *Analysis and Planning for Improved Distribution of Nursing Personnel and Services: A National Model of Supply, Demand, and Distribution, Summary Report*. Boulder, Colo.: Western Interstate Commission for Higher Education, 1977.

A non-technical report of the National Nursing Model, including model conceptualization and use. Intended for persons interested in nurse health-manpower planning, particularly policy evaluation. NTIS Order Number: HRP-0023104/3WW Price Code: A03 $4.50.

Bright, Esther. *Analysis and Planning for Improved Distribution of Nursing Personnel and Services: Field Development of the State Model*. Boulder, Colo.: Western Interstate Commission on Higher Education, 1977.

Includes a documentation of the field development of the State Model, and case studies of the five states involved in the development: Illinois, Iowa, Louisiana, New Mexico, and Vermont. Also includes a bibliography of recent state nursing studies. NTIS Order Number: HRP-0017545/5WW Price Code: A08 $8.00

Collier, Douglas J., and Segall, Mary. *Analysis and Planning for Improved Distribution of Nursing Personnel and Services: A Blueprint and Recommendations for Improved Nursing-Related Data*. Boulder, Colo.: Western Interstate Commission for Higher Education, 1977.

Examines the need for nursing-related data and assesses the ability of existing data and data-collection efforts to serve that need. Describes a framework for looking at nurse-related data as well as a set of categories and definitions for most commonly used data elements. Includes a broad set of recommendations for improving the data used in planning at the state, regional, and national levels for nursing personnel and services. Anticipated distribution, November 1978.

Elliott, Jo Eleanor, and Kearns, Jeanne, eds. Analysis and Planning for Improved Distribution of Nursing Personnel and Services: Final Report. Washington, D.C.: Government Printing Office, 1978.

A final report of the activities carried out during the 30-month contract period. Reports on the State Model, Field Development and pilot testing of the State Model, National Model, Taxonomy Committee, Long Range Data Collection and Use, Regional Centers, Training, National Conferences, New and Emerging Roles, and the Panel of Expert Consultants. Includes a listing of all participants in the project. Anticipated distribution, November 1978.

Kodadek, Sheila, ed. Analysis and Planning for Improved Distribution of Nursing Personnel and Services: Inventory of Innovations in Nursing. Bethesda, Maryland: U.S. Department of Health, Education, and Welfare (DHEW Publication No. HRA 77-2), 1977.

A collection of examples of approaches to improving the distribution and utilization of nursing personnel and services. Entries include information on nursing roles, practice sites, target populations, payment mechanisms, and evaluations. Also included, summary reports of the seven demonstration projects funded through the Analysis and Planning Project. Useful to nurses in service settings and in educational programs, and to health planners.

Gingras, Pauline, ed. Analysis and Planning for Improved Distribution of Nursing Personnel and Services: National Conferences. Bethesda, Maryland: U.S. Department of Health, Education, and Welfare (DHEW Publication No. HRA 77-3), 1977.

The proceedings of the Second National Conference held in Denver, July 21-23, 1976. Includes the major addresses given at the first and second conferences, the issues papers presented at the conferences, and workshop discussions. Includes summaries, descriptions of each of the activities carried out during the 18 months of the project; State Model, Field Development, National Model, Taxonomy Committee, Regional Centers, Training, Long-Range Data Collection, New and Emerging Nursing Roles. NTIS Order Number: HRP-0023109/2WW Price Code: A05 $6.00

Gingras, Pauline M. Analysis and Planning for Improved Distribution of Nursing Personnel and Services: Regional Centers. Boulder, Colo.: Western Interstate Commission for Higher Education, 1977.

Includes a description of the regional center activities within the New England, Southern, Midwestern, and Western regions. A national perspective, as well as recommendations for future national and regional activities is presented. NTIS Order Number: HRP-0017900/2WW Price Code: A06 $6.50

Gray, Robert, and Sauer, Ken. Analysis and Planning for Improved Distribution of Nursing Personnel and Services: Nursing Resources and Requirements: A Guide for State-Level Planning. Boulder, Colo.: Western Interstate Commission for Higher Education, 1978.

Written to assist state-level decision makers in the nursing, health planning, and higher education communities, the *Guide* begins with a theoretical discussion of the important aspects of planning for nursing resources and requirements at the state and substate levels. It then explains how recent information about nursing and related health-care factors may be used to reach specific conclusions regarding the issues raised in the theoretical discussion. Finally, the *Guide* describes mathematical procedures that may be used to project nursing resources and requirements over a one- to five-year period, given a particular set of user-specified assumptions. Anticipated distribution, November, 1978.

Lum, Jean, with Leonhard, Gregory. *Analysis and Planning for Improved Distribution of Nursing Personnel and Services: Panel of Expert Consultants, Final Report*. Boulder, Colo.: Western Interstate Commission for Higher Education, 1978.

This publication includes the Panel of Expert Consultants' recommendations and justifications for criteria for components given in *Analysis and Planning for Improved Distribution of Nursing Personnel and Services: Nursing Resources and Requirements: A Guide for State-Level Planning*, as used in developing nationally derived state-by-state estimates for nursing requirements. The resulting estimates for each state, by 1982, are presented in table form plus the projected resources. Background information on the current situation is included. Anticipated distribution, November 1978.

Mactavish, J. Kevin, ed. *Analysis and Planning for Improved Distribution of Nursing Personnel and Services: A Manual for Training in Analysis and Planning for Improved Distribution of Nursing Personnel and Services*. Boulder, Colo.: Western Interstate Commission for Higher Education, 1977.

A compilation of training materials and implementation procedures resulting from information/instructional activities carried out during the Analysis and Planning Project. Intended for educational personnel to plan and conduct training for nurse leaders to use data bases and analytical models as planning tools for improving the distribution of nursing expertise. Anticipated distribution, November 1978.

Makowski, David, and Smith, Mark. *Analysis and Planning for Improved Distribution of Nursing Personnel and Services: Users' Manual for the Profile Report Generation System*. Boulder, Colo.: Western Interstate Commission for Higher Education, 1978.

This technical document provides the necessary information and instructions to produce the individual nursing and health-care profile reports described in *Analysis and Planning for Improved Distribution of Nursing Personnel and Services: Nursing Resources and Requirements: A Guide for State-Level Planning*, using the Profile Data Base and the Computerized Profile Report Generation System. The *Manual* is intended for persons with some technical background in computing systems and data processing.

Makowski, David, and Traut, Ken. *Analysis and Planning for Improved Distribution of Nursing Personnel and Services: Users' Manual for the Requirements Calculation Software*. Boulder, Colo.: Western Interstate Commission for Higher Education, 1978.

This *Manual* facilitates the generation of a range of requirements projections for nursing personnel based on the assumptions' worksheets, mathematical equations, and procedures described in *Analysis and Planning for Improved Distribution of Nursing Personnel and Services: Nursing Resources and Requirements: A Guide for State-Level Planning*. The *Manual* is a technical document which provides the necessary information and instructions for entering the requirements assumptions to the software to produce sets of projections. This publication is intended for persons with some knowledge of computing systems.

Smith, Mark, with Felix, Jerome. *Analysis and Planning for Improved Distribution of Nursing Personnel and Services: A Directory of Nursing-Related Data Sources*. Boulder, Colo.: Western Interstate Commission for Higher Education, 1977.

A catalogue and description of more than 60 sources of nursing-related data applicable to the study of nursing manpower and related areas at the state and substate levels. Provides detailed information which will allow users to obtain access to these sources. NTIS Order Number: HRP-0017078/8WW Price Code: A08 $8.00

Smith, Mark, with Malanowicz, Kenneth. *Analysis and Planning for Improved Distribution of Nursing Personnel and Services: Users' Manual for the Profile Data Base*. Boulder, Colo.: Western Interstate Commission for Higher Education, 1978.

This is a technical document which provides the information necessary to facilitate use of the data base. It provides detailed specifications and descriptions of the data base as well as information concerning the more than 15 data sources which were utilized in its creation.

Analysis and Planning for Improved Distribution of Nursing Personnel and Services: State Summary Nursing Profile Reports, Volumes 1 Through 51. Boulder, Colo.: Western Interstate Commission for Higher Education, 1978.

These documents contain the state-level nursing and health-care profile reports for the 50 states and the Districts of Columbia described in *Analysis and Planning for Improved Distribution of Nursing Personnel and Services: Nursing Resources and Requirements: A Guide for State-Level Planning*. The documents are intended for planners at the state level who either do not have access to computing facilities or who do not choose to use the *Users' Manual for the Profile Data Base* and the *Users' Manual for the Profile Reports Generation System*.

Woellhof, Ken, and Makowski, David. *Analysis and Planning for Improved Distribution of Nursing Personnel and Services: Users' Manual for the Resources Calculation Software*. Boulder, Colo.: Western Interstate Commission for Higher Education, 1978.

This manual facilitates the generation of a range of resources projections for nursing personnel based on the assumptions worksheets, mathematical equations and procedures described in Analysis and Planning for Improved Distribution of Nursing Personnel and Services: Nursing Resources and Requirements: A Guide for State-Level Planning. The Manual is a technical document which provides the necessary information and instructions for entering the resources assumptions into the software to produce sets of projections. This publication is intended for persons with some knowledge of computing systems.

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[1] Reports available through the National Technical Information Service can be purchased by writing to NTIS, U.S. Department of Commerce, 5285 Port Royal Road, Springfield, Virginia 22161. It will be necessary for you to include the order number and a check for the amount of the report when ordering the documents from NTIS.

SELECTED BIBLIOGRAPHY ON PLANNING FOR NURSES

1. *The American Nurse*. "Nurses Successful in Gaining Positions on HSA's: March 15, 1976.

   "Health Systems Agencies Move Nearer to Reality", April 1, 1976.

   "Extension of Health Planning Act Gets Tentative Approval", and "Nurses Involved in Diverse HSA Roles", June 15, 1977.

2. ANA--*Guidelines for Review of Nursing Care at the Local Level*, ANA, NP 54-10M-76, $3.00 per copy.

3. Ardell, Donald and Newman, Antoinette, "Health Promotion: Strategies for Planning", *Health Values: Achieving High Level Wellness*, p. 100-107, May/June 1977.

4. Bergan, T. and Hirsh, G. (1976). *A National Model of Supply, Demand and Distribution Summary Report*. Pugh-Roberts Assoc., Western Interstate Commission for Higher Education, Boulder, Colorado, 1976.

5. Bowman, Rosemary A. and Culpepper, Rebecca, "National Health Insurance: Some of the Issues", *American Journal of Nursing*, Vol. 75, p. 2018, November 1975.

6. Bureau of Health Resources Development. *Health Planning and Resources Development Act of 1974* (DHEW: Publication No. (HRA) 74-14015.)

7. Cambridge Research Institute. *Trends Affecting the U.S. Health Care System*, DHEW Publication No. HRA 76-14503. Washington, D.C. Government Printing Office, October 1975.

8. Carl, Mary K., "Community Planning for Nursing and Nursing Education", *Nursing Outlook*, Vol. 20, p. 507-509, August 1972.

9. Chopoorian, Teresa J. and Craig, Margaret M., "PL 93-641--Nursing and Health Care Delivery", *American Journal of Nursing*, pp. 1988-1991, December 1976.

10. Chopoorian, Teresa J. and Craig, Margaret M., *Future Directions for Nursing in New Hampshire*, (available from NHNA, 48 West St., Concord, N.H. 03300).

11. DHEW, *Toward Quality in Nursing*, P.H.S. Publication No. 992, 1963.

12. DHEW, *Forward Plan for Health*, 1975.

13. DHEW, *Health Systems Agencies: Designation and Funding*, Federal Register 41 (60): 12811-12834, (March 26) 1976.

14. DHEW, First Report to the Congress, February 1, 1977. Nurse Training Act of 1975. Report of the Secretary of Health, Education, and Welfare on the Supply and Distribution of and Requirements for Nurses as Required by Section 951, Nurse Training Act of 1975. Title IX, Public Law 94-631. Publication No. HRA 78-38. Washington, D.C. Government Printing Office, February 1978.

15. Doyle, Timothy, et al. The Impact of Health System Changes on the Nation's Requirements for Registered Nurses. In Press. Washington, D.C. Government Printing Office, 1978.

16. Giovannetti, Phyllis. Patient Classification Systems and Their Uses. Nurse Planning Information Series. In Press. Springfield, Virginia. National Technical Information Service, 1978.

17. Goldfarb, Marsha. "Methodological Approaches for Determining Health Manpower Planning Models", Medical Care Review 32:1-27, June 1975.

18. Gray, R. and Sauer, K. Nursing Resources and Requirements: A Guide for State Level Planning, (In Press), Boulder, Colorado, Government Printing Office, 1978.

19. Health Policy Advisory Center--"HSA's If at First You Don't Succeed . . ." Health/PAC Bulletin, No. 70, May/June 1976.

20. HEW/HRA (1974). Bureau Health Resources Development (1974). The Supply of Health Manpower, the 1970 Profiles and Projections to 1990. DHEW Publication No. (HRA) 74-38, December 1974.

21. HEW/HRA (1974). Source Book (nursing personnel). DHEW Publication No. (HRA) 75-43, December 1974.

22. HEW/HRA/BHPRD (1975). Health Manpower Planning Process: 1. DHEW Publication No. (HRA) 75-14013.

23. HEW/HRA/BHPRD (1975). Health Manpower Planning Process: 2, Vol. I, Analytical Perspective, DHEW Publication No. (HRA) 76-14511.

24. HEW/HRA/BHPRD (1976). Health Manpower Planning Process: 2, Vol. II, Practical Planning Manual. DHEW Publication No. (HRA) 76-14512

25. HEW/HRA/BHPRD (1976). Guide to Data for Health System Planners, Vol. 2. Health Planning Information Series, DHEW Publication No. (HRA) 76-14502, April 1976.

26. HEW/HRA (1976). Assessment of Health Manpower Modelling Efforts and Development of Alternative Modelling Strategies. DHEW Publication No. (HRA) 77-17, October 1976.

27. Hiestand, Dale and Ostow, Miriam. Health Manpower Information for Policy Guidance, Cambridge, Mass. Ballinger Publishing Co. 1976.

28. Jacox, Ada, "Address to the Next Generation", *Nursing Outlook*, p. 38-41, January 1978.

29. Jeffers, James R. et al, "On the Demand Versus Need for Medical Services and the Concept of Shortage", *American Journal of Public Health* 61: 46-63, January 1971.

30. Kalisch, Philip A. and Kalisch, Beatrice J. *Nursing Involvement in the Health Planning Process*, Nurse Planning Information Series, DHEW Publication No. (HRA) 78-25, Springfield, VA, National Technical Information Service, 1978.

31. Knowles, John (Ed.) *Doing Better and Feeling Worse--Health in the U.S.*, W.W. Norton and Co., Inc., NY 1977.

32. Lalonde, Marc, *A New Perspective on the Health of Canadians*, Ottawa, April 1974.

33. Levine, Eugene. "What Do We Know About Nurse Practitioners". *American Journal of Nursing* 77:1799-1803, November 1977.

34. Levin, Lowell S., "Self Care and Health Planning", *Social Policy*, p. 41-53, Nov./Dec. 1977.

35. Millman, Michael L. ed., *Nursing Personnel and the Changing Health Care System*. Cambridge, Mass., Ballinger Publishing Co., 1978.

36. National Commission for Manpower Policy, *Employment Impacts of Health Policy Developments*. Special Report No. 11, Washington, D.C., The Commission, October 1976.

37. New Jersey State Department of Higher Education (1976). *An Analysis of the Need for Nursing Personnel in New Jersey*. New Jersey State Department of Higher Education, Office of Health Professions Education, November 22, 1976.

38. O'Connor, Andrea, "Diagnosing Your Needs for Continuing Education", *American Journal of Nursing*, 78:405-406, 1978.

39. Research Triangle Institute. *Proceedings and Report of Conference on a Health Manpower Simulation Model*, Vol. II. Lucy Kramer, Ed. DHEW Publication No. (NIH) 73-508.

40. Segall, Mary and Sauer, Ken. "Nurse Staffing in the Context of Institutional and State-Level Planning." *Nursing Administration Quarterly* 2:39-50, Fall, 1977.

41. System Sciences, Inc., *The Physician Extender Reimbursement Study*, In Press, Washington, D.C. Social Security Administration, 1978.

42. Vector Research, Inc. (1974). *An Analysis of Health Manpower Models, Vol. 1 of a Health Manpower Evaluation Study*. Report of Contract No. MI-24313, Vector Research, Inc., Ann Arbor, Michigan, May 1974.

43. Werlin, Stanley H., Walcott, Alexandra and Joroff, Michael, "Implementing Formative Health Planning Under P.L. 93-641. The New England Journal of Medicine, pp. 698-703, September 23, 1976.

44. Western Interstate Commission for Higher Education. Inventory of Innovations in Nursing. DHEW Publication No. (HRA) 77-2, Denver, Colorado, Government Printing Office, November 1976.

45. Western Interstate Commission for Higher Education. National Conferences. DHEW Publication No. (HRA) 77-3. Denver, Colorado. Government Printing Office, November 1976.

46. Western Interstate Commission for Higher Education. Report of the Panel of Expert Consultants. Boulder, Colorado, The Commission, April 1978.

47. Western Interstate Commission for Higher Education. Final Report of the Project, Analysis and Planning for Improved Distribution of Nursing Personnel and Services. In Press. Denver, Colorado, Government Printing Office, September 1978.

48. Robert R. Nathan Associates, Inc. Methodological Approaches for Determining Health Manpower Supply and Requirements. Vol. 1 Analytical Perspective. Vol. 2. Practical Planning Manual. DHEW Publication No. (HRA) 76-14511 and DHEW Publication No. (HRA) 76-14512. Springfield, Virginia. National Technical Information Service, 1976.

49. Division of Manpower Intelligence, An Annotated Bibliography of Basic Documents Related to Health Manpower Programs. DHEW Publication No. (HRA) 75-7. Washington, D.C. Government Printing Office, 1974.

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Planning Methodologies for Predicting Nurse Manpower Requirements

AGENDA

Monday, April 24, 1978

8:00 - 9:00	Registration
9:00 - 9:30	Introduction to the Conference Alice Turak, Associate Director for Training PACT Health Planning Center Bernice Szukalla, Nursing Consultant, Region VIII Health Manpower Programs
9:30 - 10:30	Keynote Speech - Margaret Craig, RN, MS. District Health Officer, Western Regional Office, Massachusetts Department of Public Health, Massachusetts SHCC, Western Massachusetts HSA - "Nursepower Planning - Integration under P.L. 93-641."
10:30 - 10:45	Break
10:45 - 12:00	Econometric Model - Lewis Dars, Ph.D., Director, Office of Health Manpower, State Department of Higher Education, New Jersey
12:00 - 1:30	Lunch (catered)
1:30 - 3:00	The South Dakota Linkage Project - Sister Mary Schneider Coordinator of Linkage Subcommittees, South Dakota Manpower Linkage Project
3:00 - 3:15	Break
3:15 - 4:30	Gathering and Analyzing Data for Manpower Planning Jay Glasser, Ph.D., Associate Professor of Biometrics University of Texas School of Public Health
4:30 - 6:30	State Caucus -What do we want a manpower plan to do for us -What information and data do we now have

Tuesday, April 25, 1978

9:00 - 10:15	The National Model - Methods, Process, Data Required, Uses and Limitations Carol Lindeman, Ph.D., Dean, School of Nursing, University of Oregon
10:15 - 10:30	Break

10:30 - 12:00 The Report of the National Panel of Expert Consultants on Nursing - Methods, Process, Data Required, Uses and Limitations
Eugene Levine, Ph.D., Chief, Analysis and Resources Branch, Division of Nursing, Bureau of Health Manpower, HRA, DHEW

12:00 - 1:30 Lunch (on your own)

1:30 - 3:30 A State Planning Model for Nursing Manpower - Processes, Uses and Limitations - Gathering and Analyzing Data
Jo Eleanor Elliott, Director, Western Council on Higher Education for Nursing (WCHEN) and Paul Athey, Senior Systems Analyst, Western Interstate Commission on Higher Education

3:30 - 3:45 Break

3:45 - 5:00 Panel of all Participants - Reactions, Uses and Limitations of the Models

Wednesday, April 26, 1978

8:30 - 9:30 Sources of Nursing Information - Nursing Component of National Health Planning Information Center (NHPIC)
Cal Meadows, Chief, Clearinghouse Operation Section, BHPRD.

9:30 - 10:30 National Health Planning Information Center - Sources of Planning Information on Nursing
Gary Losee, Deputy Associate Director, Cooperative Health Statistics System (CHSS) NCHS

10:30 - 12:30 Workshops - Each state will meet to discuss methodologies

12:30 - 2:00 Lunch (on your own)

2:00 - 3:30 Plenary Sessions - Report of the States

END